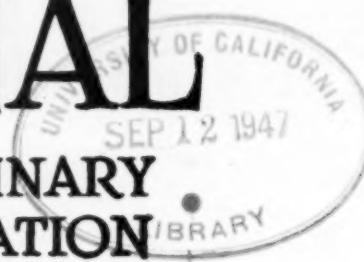


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JOURNAL

OF THE

AMERICAN VETERINARY MEDICAL ASSOCIATION



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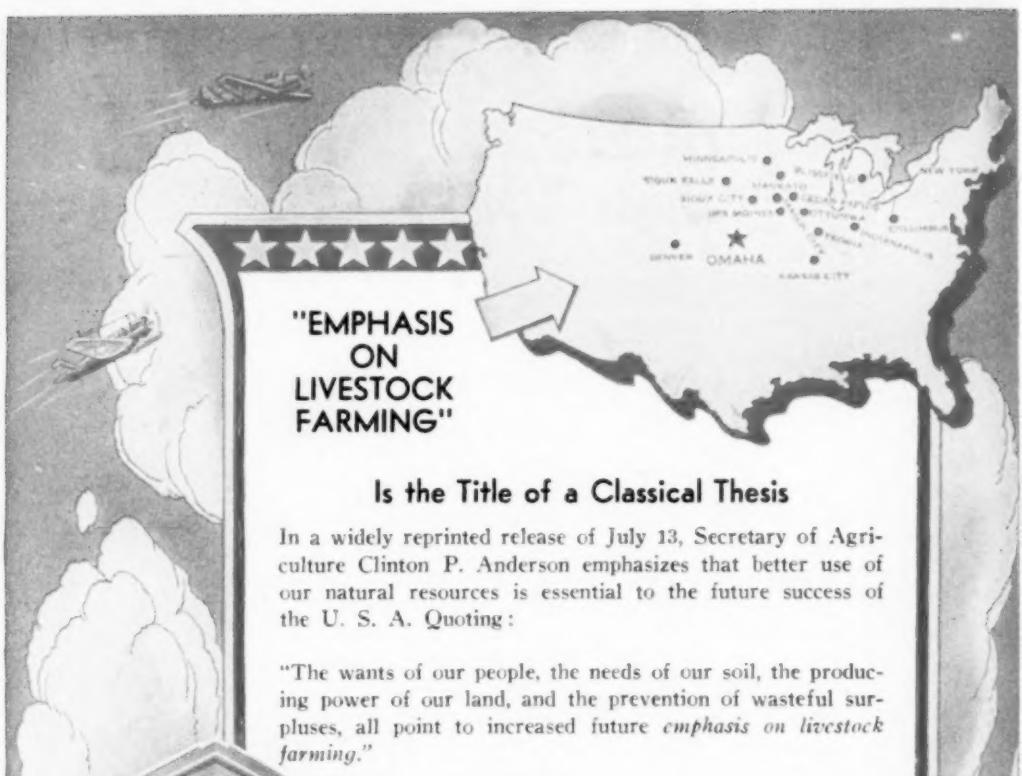
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Editorial

Current Literature

The News

(Contents continued on ad pages 2 and 4)



"EMPHASIS ON LIVESTOCK FARMING"

Is the Title of a Classical Thesis

In a widely reprinted release of July 13, Secretary of Agriculture Clinton P. Anderson emphasizes that better use of our natural resources is essential to the future success of the U. S. A. Quoting:

"The wants of our people, the needs of our soil, the producing power of our land, and the prevention of wasteful surpluses, all point to increased future *emphasis on livestock farming.*"

**IN EFFECT, THE THEME IS A PLEA
FOR A HEALTH-OF-ANIMALS
PROGRAM OF THE HIGHER OR-
DER BASED ON VETERINARY
EDUCATION AND HONORABLE
CLINICAL PRACTICES
FOR THE LIVESTOCK
FARMERS.**



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FOREIGN LANGUAGE ABSTRACTING: Chas. H. Haasjes (Dutch), E. E. Hamann, (German), A. Karlson (Scandinavian).

\$7.00 per annum Foreign \$8.00; Canada \$8.00 Single Copies 75 cts. prepaid in U. S.
Published monthly at 800 S. Michigan Ave., Chicago, Ill., by the American Veterinary Medical Association. Mailed as second class matter August 10, 1932, at the Post Office at Chicago, Illinois, under the act of March 3, 1879. Accepted for mailing at special rate of postage provided for in Section 532, act of February 28, 1925, authorized August 10, 1932. Reproduction of any part of this publication is prohibited, unless special permission is given. Permission will be given if the purpose seems justifiable and, in signed articles, if the rights or requests of author are not violated thereby. Reprints should be ordered in advance. Prices will be quoted after publication. Please send prompt notice of change of address, giving both old and new. Advise whether the change is temporary or permanent. Address all correspondence to American Veterinary Medical Association.

Journal

of the

American Veterinary Medical Association

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600 S. Michigan Ave., Chicago 5, Ill.

VOL. CXI

SEPTEMBER, 1947

NO. 846

The President's Address

B. T. SIMMS

Washington, D. C.

To a greater extent than ever before statesmen, humanitarians, scientists, and people in general are giving thought to the complexity of society, the interdependence of its different segments, and the necessity of correlation of the efforts of all its groups. Too often we fail to get the entire picture of these interrelations. Time after time, we have called attention to the dependence of modern civilization upon the veterinary profession. Many of us have waxed eloquent in presenting evidence that we make it possible for the world to be fed and clothed. But I'm afraid we have been so busy emphasizing what society owes us that we have sometimes failed to consider our debt to society.

As a matter of fact, we are indebted to society to a greater extent than any other profession. Training in law, dentistry,

theology, medicine, or engineering may be had at privately endowed or sectarian institutions. But every approved veterinary college in Canada and the United States is supported, in part, by taxes. Every graduating veterinarian, then, is indebted to the tax-paying public. Unless we are to be branded as ingrates we must pay this debt; pay the people as a whole rather than just the livestock owners and producers. How shall we pay? By contributing to the health, the wealth, and the happiness of all of our people. We have emphasized so often our functions in controlling diseases of domesticated animals that are transmissible to people and in the inspection of foods of animal origin

that even the man in the street knows the importance of these phases of our work. But the general public, and even some members of our profession, are not aware that we are indirectly responsible for the nutritional well-being of our popula-



Dr. B. T. Simms

Address delivered at the Eighty-Fourth Annual Meeting of the American Veterinary Medical Association, Cincinnati, Ohio, August 18, 1947.

igin needed to give us an optimum diet can be produced only if our livestock is protected by a well-trained and efficient corps of veterinarians.

Few people understand the far-reaching contribution that we make to the wealth of our countries. We say glibly that the United States and Canada are the safest countries in the world for growing livestock. We recite the scourges such as rinderpest, contagious pleuropneumonia, and foot-and-mouth disease which are not present here. But we haven't really informed the public of the economic significance of freedom from these maladies. Our agricultural program would have to be radically changed if these and other diseases which are common in other parts of the world were well established here.

The free movement of sheep and cattle from range and ranch to feedlots would be an impossibility. The present system of shipping dairy cattle from breeding centers to the big city milk-sheds would be fraught with constant danger. We have mentioned only a few of the severe infections which have been either stamped out in, or kept out of, our countries. From an economic standpoint an ever greater factor is the day-by-day work of our great body of veterinarians who are treating animals on the farms, preventing and controlling outbreaks of infectious diseases, and advising with livestock producers regarding care and management of animals so that health and vigor may be maintained. Without these professional services the production of meat, dairy products, and eggs would be hazardous indeed and the farmers would turn from livestock production to the less speculative procedure of raising those crops which are used for human foods directly. Our people would then find their foods of animal origin too costly for the average income.

Our people are coming to realize that good soil is the foundation of human well-being. History records no civilization which has flourished after its soils were depleted. Any long-time program for North America must include maintenance and improvement of our soil. Even metropolitan newspapers and popular magazines are publishing editorials and leading articles on this subject. They are missing the point, though, in not stressing the im-

portance of livestock in any soil-improvement program. The land management practices which accompany livestock production include the growing of legumes, the seeding and maintenance of permanent pastures, and the feeding of livestock on the land—all soil-building practices. On the other hand, the production of fiber and human food crops includes the planting and cultivation of many inter-tilled crops, the production of very few legumes, the maintenance of almost no permanent sod. Yes, the permanency of the welfare of our people is inextricably associated with our profession.

Surely happiness comes most frequently to those who are healthy, well nourished, and reasonably prosperous. As we contribute to the health and wealth we set the stage for happiness. And we go far beyond this. Every one who practises with skill the art and the science of veterinary medicine brings a full measure of happiness to the owners of the animals that he treats. The words of appreciation and the expressions of confidence from the owner when we protect from some destructive disease, the effusive and sincere thanks from the lonely old lady whose closest companion, a pampered dog, we save, the stammered expression of gratitude from the boy who brings his dog with a broken leg—these will be treasured memories long after we forget the fee we collected.

PRESENT AVMA PROGRAM WELL PLANNED

Yes, ours are both the privilege and responsibility of contributing very materially to the health, the wealth, and the happiness of our people. This can be done to the fullest extent only if we work individually and collectively. The American Veterinary Medical Association is the logical director of our collective efforts. We believe this is a well-organized association which has developed a very much worth-while program. We think it is much more important to continue the well thought-out activities under way at present than it would be to make radical changes in the program because of nothing more than a desire for something new. The day-by-day changes in the veterinary profession and its work naturally lead to some changes in, and additions to, the association's program. A brief summary

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some events of the last twelve months will give a basis for suggestions and recommendations for additional activities in the future.

In general, the last year has been satisfactory to the veterinarians of Canada and the United States. There have been no serious, widespread outbreaks of destructive diseases; production of meat, milk, and eggs has continued at a high level; farmers have been paid well for their products; and veterinary practitioners have had a busy and profitable year. Enactment of the Research and Marketing Act by the Congress of the United States may have a far-reaching effect upon veterinary affairs as it provides for research at a very much accelerated tempo.

But some developments give us reason for real concern. The gravest of these is the appearance of foot-and-mouth disease in Mexico. Before the Mexican livestock sanitary authorities could get an effective organization to fight it, the disease had obtained the greatest foothold it has ever had on the North American Continent. Finally, though, through almost super-human efforts our Mexican confrères did succeed in stopping the spread of the disease. Now with the United States and Mexico working in unison the malady is being attacked with all possible vigor. It seems probable that the next several months will see the tide of battle turn and the disease compressed into smaller and smaller areas and that North America may finally be again free of foot-and-mouth disease.

Rabies, the disease concerning which we know so much and accomplish so little, was probably more serious in the United States during 1946 than in any other year in history. In some areas, it is becoming a serious problem among cattle and somewhat of a problem among hogs and workstock so that its economic impact is quite disturbing. Fortunately, Canada has not allowed rabies to become established within its borders.

Losses among baby pigs were probably greater this year than ever before. Whole areas in the heart of the Cornbelt weaned less than 50 per cent of the pigs farrowed. Newcastle disease or pneumoencephalitis has been diagnosed in several states which were heretofore thought to be free of this infection. X disease, as described by the

Cornell group, seems to be established in several states and may be spreading. The brown dog tick is apparently continuing its invasion of new territory.

DEMAND FOR VETERINARIANS TO BE INCREASED

Attempts on the part of people who are not properly trained to diagnose and treat diseases of domestic animals have continued and, in some areas, increased. We should not take the narrow-minded view that these activities are of no concern to us so long as they don't affect us directly. Since we are the recognized guardians of the health of our domestic animals we should consider it our duty to protect the health of our livestock in so far as we possibly can. Even at the risk of having our efforts misconstrued by the public, we must resist any program which allows and encourages hit-or-miss diagnoses, vaccinations, and treatments by untrained people.

At least some of these activities seem to be directly the result of the over-all shortage of veterinarians. This shortage is a problem which is causing concern and alarm not only to veterinarians but to livestock producers, health officers, educators, and the general public. Developments in the last few years may cause us to revise upward our estimates as to the number of veterinarians we need. I refer specifically to the indicated future increase in demand for, and production of, meat, dairy products, and eggs. Secretary of Agriculture Clinton P. Anderson said, in a statement on long-range agricultural policy made before the House Committee on Agriculture, that our people want about 40 lb. more meat than they were getting in 1937-1941, about 200 lb. more milk, and about 9 lb. more chicken per capita per annum. These figures represent an increase per capita of about 25 per cent over prewar consumption. We have actually raised per capita consumption of meat and dairy products in the United States about half this much since the 1931-1940 period. In spite of high prices, this year may see us eat even more meat than we did last year and 1946 was a record meat-consuming year. We have already increased our per capita consumption of eggs about 25 per cent in the last seven years. But this isn't the whole story. Census Bureau figures indicate our population has increased 8 per cent in the

last seven years, that it will increase another 2 per cent by 1950, and still another 6 per cent by 1960. With this increase in mouths to feed we must step up our meat, milk, and egg production to about 37 per cent more than the prewar averages by 1950 if we meet Secretary Anderson's estimates of our wants. By 1960 the increase must be nearly 50 per cent.

This raises the fundamental question as to whether we can grow enough feed on our farms, ranches, and ranges to make these amounts of meat, milk, eggs, and poultry. With hybrid corn, improved varieties of oats and wheat, improved varieties of pasture and hay plants, known better cultural methods, and increased use of commercial fertilizers, our friends in the agronomic field assure us enough feed can be produced. Just as an example of what is already being done, this year's short corn crop would have been a bumper production ten years ago before hybrid seeds were being used in the Cornbelt.

With this increase in food-producing animals there will be an almost corresponding increase in demands for veterinarians. We shall need more men in general practice, more state or federal employees, more food inspectors, and more producers of biological products. With the increase in population, it is logical to expect the demands for small-animal veterinarians to at least keep pace.

Instead of being alarmed at the number of new veterinary colleges which are being developed we can well doubt that even these additions to our colleges will give us a sufficient number of veterinary graduates. But we should realize that the present great pressure to enter veterinary colleges is abnormal. In this connection, it is rather questionable as to whether all these applicants are really interested in veterinary medicine as a life career. Indications are that at least some of them are wanting to enroll because they think this is an easy way to make a good living and to accumulate something extra. We hope every dean is impressing each and every applicant with the fact that a veterinarian's life is a strenuous one at best; and that, to the man who isn't interested, it may be real drudgery.

LIVESTOCK INDUSTRY AND VETERINARY MUST COÖPERATE MORE CLOSELY

If we are to give the very best service we must work in closer coöperation with the livestock breeders and producers. Many of these people consider us as necessary only when animals are acutely sick. We should become counselors; sit on the committees which plan long-range programs for the livestock industry. We believe this can be brought about only if we can meet them on a common ground. In discussing this with livestock leaders we have been told that veterinarians are too technical in their viewpoints and discussions to be of much use on such committees. We can change this if we are enough about normal animals and their care and management to discuss freely and intelligently. Without attempting to assume the rôle of the Council on Education we are suggesting that the deans and curricular committees give serious thought to strengthening courses in this field. In the meantime our Association should foster every effort toward better understanding and closer operation among all groups which are concerned with the production, processing and distribution of foods of animal origin.

LEGISLATION NEEDED TO STABILIZE LIVESTOCK DISEASE CONTROL

In some of the states of the United States, in which the office of the livestock sanitary official is filled by appointment, changes in personnel are frequent. In some instances this is due to lack of continuity of programs for disease control. A sub-committee of the National Research Council is making a survey of the laws which set out the method to be followed in the selection of livestock sanitary officials in the different states. We understand that this sub-committee will determine the facts, make a report and disband, leaving it to the interested groups to decide what action, if any, should be taken. We think the entire livestock industry of the United States will be strengthened if the disease-control personnel in the different states can be assured of reasonable permanency of tenure. The reasons for this are obvious. The American

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Veterinary Medical Association and the United States Livestock Sanitary Association should, we believe, initiate and support a coöperative effort by all interested livestock organizations to enact satisfactory laws in those states which need them.

THE VETERINARIAN AND PUBLIC HEALTH WORK

It has been our belief for many years that most students in medical colleges graduate with very hazy ideas of the relation of the veterinarian and his work to human health. Several medical colleges have realized this should be corrected and have either appointed, or are looking for, veterinarians for their staffs. Personal experience has shown that medical college administrators who do not have veterinarians on their faculties are glad to have members of our profession address their students. We believe the American Veterinary Medical Association should sponsor such appearances.

PUBLIC RELATIONS SHOULD BE BROADENED

Our information and public-relations service has done a fine job in recent years. Along with other agencies we have kept before the livestock people the importance of good veterinary service. Partly as a result of this, but particularly because of the threat of foot-and-mouth disease, our livestock producers are realizing the necessity for veterinarians. But very few of them either know how much veterinary education costs or realize that their active support is necessary if our veterinary colleges are to have sufficient financial support. Our attention was called recently to a letter from a county farm organization to a dean asking that a veterinarian be encouraged to locate in their county. But they sent no letter to the legislature asking that the veterinary college be well supported. We should broaden our informational service to include facts about education. We have the chance of a lifetime, right now, to inform the people that there must be ample financial support if our veterinary colleges are to graduate well-trained veterinarians in sufficient numbers.

The recommendations made in this address are summarized as follows:

- 1) The well-planned program in operation at present should be continued.
- 2) We should revise upward our estimates of the number of veterinarians needed in the United States and Canada.
- 3) The Association should foster closer coöperation between the veterinary profession and all those people who are concerned with the production, processing, and distribution of foods of animal origin. This can be accomplished best if our members have better training in the basic principles of animal production.
- 4) The Association should actively assist in securing legislation which will help to stabilize livestock-disease control.
- 5) Our Association should initiate a program of having veterinarians inform medical students of the relations of our work to human-health problems.
- 6) Our information and public-relations activities should be broadened.

Pulmonary Bovine Tuberculosis in Man

A survey made in Denmark from 1932 to 1940 revealed that the occurrence of bovine tuberculosis in man corresponds quite closely to the patients' contact with cattle. The total number of cases studied was 566, all more than 15 years old. Of these, 90 were infected with the bovine bacillus. Investigated as to exposure, 40.6 per cent had lived in rural areas for at least two years, 28.2 per cent in rural and urban districts, and 3.6 per cent in urban districts. In regard to contact, 94 per cent of the rural cases had been exposed to strongly tuberculous herds and 6 per cent to healthy appearing reactors. There were no cases attributable to tuberculin-negative herds. The conclusion drawn was that pulmonary tuberculosis of bovine origin is an occupational disease.—*Abstract from a book review in Brit. M.J., June 21, 1947:888.*

The breeding of hybrid varieties of corn for specific feeding qualities, as well as for yield and adaptation to soils and climate, is forecast by the USDA.—USDA.

The Mexican Outbreak of Foot-and-Mouth Disease.* VII.

RECENTLY, officials in charge have found it necessary to reiterate that vaccines have no place in the eradication work on foot-and-mouth disease in Mexico. This restatement of policy, which was agreed upon early in the campaign, was prompted by more proposals that vaccination would hasten the elimination program.

"NO VACCINE" STAND CONFIRMED

Actually, vaccination would be a hindrance. This view was expressed by Licentiate Oscar Flores and Dr. M. S. Shahan, codirectors of the joint eradication commission, and their technical advisors in a statement released by the USDA on July 24, 1947. The reasons: In countries where vaccination against foot-and-mouth disease has been tried, it has not led to complete suppression of the disease nor has it been fully dependable as a preventive; some vaccinated animals are never fully resistant; the duration of immunity is only from five to eight months; hence, to maintain protection, revaccination is necessary; it would be impossible to maintain the potency of the vaccine prior to use in many areas of Mexico because of difficult transportation and other unfavorable conditions. Moreover, difficulties have been encountered in countries where vaccines have been tried in the procurement of wholly susceptible animals for producing and testing the product, to say nothing of the hazard in preventing the escape of the highly infective virus from laboratories and its spread among livestock, and the possibility that some vaccinated animals might develop into carriers.

FULL COÖPERATION ESSENTIAL

The gravity of the situation has been emphasized by President Alemán of Mexico, who visited several areas of foot-and-mouth infection early in June. In his talks to the people, especially the stock breeders, President Alemán stressed that foot-and-mouth disease is the most serious problem facing Mexico today; that the methods being used to combat it are the most effective known; and that final success would be

*See previous issues of the JOURNAL, beginning with the March, 1947, number, for earlier summaries of the situation in Mexico.

gained only by full coöperation of all Mexicans in the eradication work.

Meanwhile, complete and active support has been pledged by a new organization representing all cattle interests in eight northern Mexican states which are still free from the infection; the Cattle Raisers Congress for Defense Against Foot-and-Mouth Disease has been organized to conduct an educational program among the people in country districts and will work with eradication officials on means of effective coöperation. This group has also recommended that the slaughter of infected and exposed animals be speeded up in the infected areas; that quarantine and disinfection measures be fully enforced; and that cattle stealing in the infected zone, with subsequent conveyance of stolen animals to northern areas, be strictly dealt with. The latter problem is causing much concern among cattle owners in the uninfected areas.

At the same time, officials of the Mexican and United States governments have again pledged full support for all measures necessary to the successful termination of the fight against the malady.

SPECIAL TRAINING FOR U. S. VETERINARIANS

On this side of the border, BAI officials and state veterinarians of some of the more "exposed" states are overlooking no precautions to safeguard our herds and flocks. Recently, veterinarians from 12 states completed a two-week training course on methods of diagnosis of vesicular disease that may be confused with foot-and-mouth disease. The course was given at the BAI Animal Disease Station, Beltsville, Maryland, and included lectures, laboratory demonstrations, and motion pictures showing eradication methods, disinfection procedures, etc. Those who presented the training course included BAI Chief B. T. Simmer and Drs. H. W. Schoening, S. O. Fladness, A. B. Crawford, L. T. Giltner, Rudolph Snyder, M. R. Clarkson, F. W. Tilley, R. R. Henley, and L. O. Mott.

Several state veterinarians have also surveyed their needs and have worked out provisional plans and procedures should foot

and-mouth disease, by any chance, get across the border and invade their states.

[In presenting the story of the foot-and-mouth disease situation in Mexico in recent months, the JOURNAL has relied almost entirely upon official sources of information, although various unofficial reports and "eye witness" stories have presented a somewhat different and rather discouraging picture of the whole eradication effort in Mexico. The JOURNAL does not discount the gravity of the situation nor minimize the enormity of the problem and the difficulties to be overcome but believes that the responsible officials can be depended upon to present actual developments in Mexico as they occur.—ED.]

BAI Needs Veterinarians in Mexico

Dr. B. T. Simms, chief of the United States BAI and president of the AVMA, reports, in Circular Letter No. 2937, that he has urgent need for veterinarians to help in the current campaign to eradicate foot-and-mouth disease in Mexico. Applicants must be willing to accept an appointment for at least one year "unless separated for reasons beyond [their] control."

Vacancies exist in grades P-1, 2, 3, and 4, with salaries of \$2,644.80 to \$4,902.00 in addition to allowances to meet quarters and cost of living expenses. Travel expenses, and those for transporting of personal effects to Mexico City from the place of actual residence at time of appointment, will be paid by the Bureau. Similar expenses will be assumed by the Bureau when the return trip from Mexico City is made, provided the appointee has served for the twelve months as agreed.

A knowledge of Spanish is highly desirable, but not a prerequisite for appointment. Veterinarians in the younger age group are urged to write to Dr. B. T. Simms for additional information, or to apply, if they are "in good physical condition, and free from communicable diseases or physical handicaps, because of climatic, health, living, and housing conditions which will be encountered in Mexico City," to the Personnel Division, Bureau of Animal Industry, Department of Agriculture, Washington 25, D. C. Veterinarians with wives and small children are discouraged from having their families accompany them, because of unfavorable living conditions.

Well-Told Story of Foot-and-Mouth Disease

Science News Letter (July 12, 1947) published an excellent account of the foot-and-mouth disease campaign in Mexico, under the heading of "Cattle Disease War," by Mr. Watson Davis, director of Science Service.

Conflicting "eye-witness accounts," poured out in the popular and livestock press by just about every writer who has the price of a round trip to Mexico, probably have done more harm than good as far as the campaign at large is concerned. Certainly, they have not helped to clarify the true facts in the public mind. Mr. Davis' article, in contrast, is a good example of scientific reporting that sticks to scientific facts.

Spray-Dried Eggs and Salmonellosis (Food Poisoning)

A survey of *Salmonella* food poisonings made in Great Britain (*Brit.M.J.*, June 14, 1947: 855) showed that the increase in outbreaks of food poisonings corresponded to the rise in the retail sales of spray-dried eggs. Organisms of the *Salmonella* group were isolated in 754 (9.9%) of 7,784 samples examined. As to source, 11.1 per cent were from the U.S.A., 10.5 per cent from Argentina, and 4.1 per cent from Canada. The harmless strains (*Salmonella pullorum* and *S. gallinarum*) were excluded. Species isolated were: *oranienburg*, 245 times; *montevideo*, 139; *meleagridis*, 117; *tennessee*, 90; *bareilly*, 82; *anatum*, 30 times; and *typhimurium*, the most common food-poisoning strain, only 30 times.

As the general public was most concerned over the vexation of rationing, no publicity, even to physicians, was given to the findings. Quoting: "More attention is given the problem in America; there investigators standardize methods of utensil cleansing. . . . Clearly, the risk of food poisoning from dried eggs are real."

Inasmuch as the food-poisoning species of *Salmonella* seldom, if ever, inhabit the ovary of the laying hen, the source of the contamination should be sought in the manufacturing process and/or in the subsequent handling of the finished product.—Ed.]

Adults swallow twice as many foreign objects as babies.

Vaccination against Bovine Brucellosis with Avirulent Organisms Combined with Glucido-Lipidic Antigen

An abstract of a report on a new approach to the problem of brucellosis vaccination by M. Lisbonne, G. Ramon, and H. Quartefages, of Paris, published in the April, 1947, issue of the Bulletin de l'Académie Vétérinaire de France, under the title "Vaccination des Bovins contre l'infection brucellique par l'inoculation associée d'un germe avirulent et d'un antigène glucido-lipidique." The overall significance of this work is that it signalizes a method of reinforcing live culture vaccination against bovine brucellosis by means of a germ-free agent injected from time to time in the treated animals.

THE AUTHORS present the results of a complete, six-year study of 77 vaccinated heifers in badly infected herds, believing that such limited but carefully conducted tests can be more instructive than work on a much larger, but imperfectly controlled, scale. This point is mentioned, lest such a small experiment be considered insignificant. However, in France, only a few experiments of this kind have been animated and scientifically pursued.

The project was started because anti-brucellie vaccination had registered only failure until recent years. Conditions in France were not favorable during the interval covered by this experiment (1941 to 1945). Moreover, it was a costly one,—the laboratory and the experimental animals were far apart; it was necessary to train the staff; and it required five years to collect and compute the results. Nevertheless, the preliminary work on laboratory animals had been so successful that it was deemed sufficiently important to warrant expenditure of the necessary time and money.

All the world now agrees that killed vaccines [bacterins] are not effective against bovine brucellosis. The principles of vaccination with *Brucella* strains of actual but attenuated virulence, as advanced by Huddleson and his coworkers, have been tested and are accepted by the authors as the means of attaining the desired end. Such strains induce a resistance without subsequent elimination of the organisms in the milk and other secretions. The Huddleson smooth strain and the BAI strain 19, are undoubtedly the best of the American vaccine cultures.

The authors point out that vaccination is not the correct term for the procedure commonly followed in attempts at brucellosis immunization. In the strict sense, vaccination should not be used as a synonym for

premunition as practised in calves, nor for vaccinotherapy, nor for hyperimmunization by injection of living organisms into a animal already infected naturally.

Since bovine brucellosis is characterized by abortion and contagion, the U. S. BAI program has been aimed at reducing the percentage of abortions and at protecting the animals against contagion detectable by serologic and bacteriologic examinations. According to BAI reports, after treating 8,182 animals and observing them through 3 pregnancies, 96.9 per cent conceived normally and only 1.6 per cent aborted. Of the normal gestations, 1,346 (17%) still showed a positive or suspicious agglutination reaction after conception, but about one-third of these cleared up within six months.

This agrees with the authors' results. They used a smooth strain of *Brucella abortus* (B 112) mixed with a glucido-lipidic antigen extract of *Brucella melitensis* (AGL). B 112 is nonpathogenic for guinea pigs, and alone it does not vaccinate. Likewise, repeated injections of AGL did not vaccinate although they stimulated the production of antibodies, reinforced resistance to slight infection, produced precipitins, and provoked a state of allergy. But when the two products were used simultaneously, or when the B 112 injection was followed by an AGL injection, such animals could be injected with billions of the organisms without a single isolation of the injected bacteria from the blood stream or the lymphatic organs.

When 0.5 cc. of AGL was injected subcutaneously into guinea pigs which had been inoculated several weeks previously with large doses of B 112, the antibody index mounted to 1:1,280 or 1:2,560 in fifteen days. Injections of challenge doses of *Br. melitensis* at this time showed that 8 of 10 guinea pigs resisted all pathogenic ef-

fects: There were no lesions at autopsy, no positive cultures, and their blood-serum, agglutination titers dropped to less than 1:20 in all instances.

In view of these successes, 9 ewes were vaccinated and then checked regularly by means of bacteriologic and serologic tests for three months. None of the vaccines showed infection, although 180 examinations of various kinds were made. The controls were found to be infected, showing positive serum and milk agglutination titers and positive cultures, although none aborted.

Cattle were then vaccinated, in herds and in regions where abortion was an economic calamity, some herds having an abortion rate of 80 per cent.

Materials and Methods.—The strain of *Br. abortus* used (B 112) was originally isolated from a cow by Morales Otero of Puerto Rico. It is nonpathogenic for guinea pigs, and by itself does not immunize against Brucella infection. It grows in the presence of CO_2 , is atypical in the sense that it gives only a weak growth on Huddleson's thionin agar (1:30,000) after forty-one days' incubation; however, it grew abundantly on Petragnani's medium. In these experiments, it was subcultured in the laboratory every fifteen or twenty days on liver agar (pH 6.6).

The glucido-lipidic antigen (AGL) was prepared according to the technique of Bovin from a strain of *Br. melitensis* lethal for guinea pigs.

To the end of insuring that they were working in Brucella-infected herds, the authors observed some abortions, drew some samples of milk and blood which they subjected to the agglutination test, and inoculated guinea pigs. By these methods, the presence of the specific organisms was confirmed.

For the field trials, serologically and bacteriologically sound heifers less than 5 months old were selected for vaccination. Three methods of inoculation were used. (1) The injection of the B 112 microbial suspension followed in forty-five days by the injection of AGL. (2) Simultaneous injection of B 112 and of AGL at separate points. (3) A single injection of a mixture of B 112 and AGL. In each case, the bacterial injection consisted of 1 cc. containing 20 billion organisms. Intradermic and hy-

podermic routes of inoculation were used, and both yielded the same results.

Results.—Immunity was maintained or reactivated by a single 4-cc. injection of AGL in the early experiments, and by the addition of 1 billion organisms to this antigen in later trials. The duration of immunity could not be fixed, since it was reactivated every eight to ten months—being careful to avoid reinjection after the fifth month of pregnancy.

The intradermic injection (in the dewlap) left a nodule the size of a pea for about six months; the hypodermic injection (behind the shoulder) left no trace.

Lactation was diminished for a day in only one instance, following some 200 or more inoculations.

Appetite was reduced for two or three days in only three animals.

Of 77 animals inoculated, there were 118 normal births and only 1 abortion over the period of six years.

The agglutination titer of the vaccines was about 1:100 two months after vaccination, and negative or nearly so at the time of reactivation in about eight months. It then rose again to about 1:780 and slowly receded to 1:10 in eight months.

Only once was it possible to recover *Br. abortus* from the blood, milk, or vaginal exudate.

Wood Floor vs. Concrete for Cows.—A Wisconsin correspondent of *Hoard's Dairyman* (July 10, 1947) believes that the use of a straw-bedded board floor over a concrete stable helps to prevent mastitis, as evidenced by the fact that he never had udder troubles while his herd was maintained in this manner. When the board floor was removed so that the milk could qualify as grade A, all of his cows developed mastitis. Moreover, on concrete his cows lie down for only about four hours out of 24, whereas on the wooden floor they reclined whenever they were not eating. He also observed that shavings or straw is not sufficient insulation on concrete for the eight months that animals must be housed in Wisconsin.

The revival of chemotherapy is indicated in graduate courses on various subdivisions of pharmacy established in leading universities.

New Patients for Veterinarians

EDWIN J. FRICK, D.V.M.

Manhattan, Kansas

OFTEN veterinarians are active in many fields. They service large and small animals, furbearers, zoo inmates, poultry, game animals, and wildlife. A new future field largely unrecognized as yet in this country by our profession, but for years included in the curriculum in many European veterinary schools before World War II, is that of diseases of fish. Veterinarians diagnose, treat, and pass on the health and food value of animals. Recently, the army recognized the importance of inspection of fish and fish products as attested by the excellent paper given at the last AVMA convention.¹ Now, we need to become interested and familiar enough to diagnose, treat, and prevent diseases in fish. Basically, no one in a community is better qualified to do this than the veterinarian. With a little interest in the subject he can easily adjust his knowledge to apply to fish and be capable of rendering satisfactory service. With the tremendous increase of farm ponds and with the growing necessity of fish conservation for food and recreation as real community assets, the veterinarian has an opportunity to apply his knowledge.

We should consider that more pounds of meat (fish) can be raised on an acre of water than on an acre of land,—raised cheaper, and with less labor, not to mention the sport element. Such a husbandry will develop rapidly and has a worthwhile future. As veterinarians, we can help protect the great sums spent for the stocking of streams and lakes, protect human health from fish-borne diseases, and increase our circle of worthwhile human contacts. Every fisherman will recognize the veterinarian as a friend.

As an introduction to the field, one should first become acquainted with the different species of fish so that the common ones can be recognized. Although there are several hundred fresh water fish alone, only a couple of dozen are common. Any standard text on fish will help, but a good colored, illus-

The author has been vice-president, since 1926, of the Frantzhurst Rainbow Trout Company, Salida, Colo., largest commercial hatchery in the U. S. A.

¹Col. Jesse D. Derrick: Sanitary Problems Connected with Army Fish Inspections. *J.A.V.M.A.*, 110, (1947) : 77-82.

trated one is "Representative North American Fresh Water Fishes" by John Nichols (1942, Macmillan Company, \$10). After really becoming interested, there is much fish anatomic literature to enlarge knowledge of ichthyology. Diseases of fish roughly fall into four groups: nutritional, parasitic, infectious, and miscellaneous.

Before taking up these groups, it may be well to be reminded that the general knowledge of bacteriology, virology, parasitology, sanitation, etc., applies with slight variation, to fish. Enteritis in fish is much the same as that in mammals or birds. A little observation will suggest one concerning the ready adaptation that can be made of scientific knowledge already assimilated. Knowledge of their surroundings is important, as hatchery fish live differently than those in natural ponds, lakes, or streams.

Considering nutrition, the character of food and its availability are important. Fish suffer from over-feeding, avitaminosis, imbalanced feeding, under-feeding, and the basic digestive disturbances to which animals are heir. Fish, though primarily carnivorous and cannibalistic, can thrive on a herbaceous diet, though the average fish is omnivorous. As trout, bass, perch, and other fish, *et al.*, have various feeding habits, special knowledge of each aids in the interpretation of symptoms. Constipation and fatty degeneration of the liver are equally obvious to a good veterinarian, whether seen in a pike or a sunfish. The oxygen content of the water must be considered as a nutrient, and when large numbers of fish are found dead at one time, water and food are the likely etiologic factors.

In external and internal parasites, the former have the most common cause of fish mortality and also the easiest one to recognize. I will now give a general idea of the external parasites to look for:

1) A small trematode of the genus *Crystodactylus* may occur anywhere on the fish's body and, where it attacks, a blue

due to mucous secretions accumulates. The microscope readily shows the presence of the active worm. A hand lens will show it crawling on the fish. The infested fish tend to rub or scrape themselves on the pond floor. *Gyrodactylus* does not lay eggs but is viviparous. The young attack their host as soon as born. Placing diseased fish in a 1:4,000 solution of formalin for a short time destroys the parasite and seldom injures the fish. Another treatment, 1:100,000 solution of potassium permanganate, is successful. Saturated salt (NaCl) solution as a bath for two minutes is a common treatment for many skin ailments.

2) A larger trematode, *Discocotyle salomonis*, attacks the gill. It is visible to the unaided eye, being 3 to 5 mm. long. The damage it does to the gills brings about an acute, fatal anemia. It is usually found in older fish.

3) A copepod or small crustacean, the *Salmincola edwardsii* has been found on brook trout, firmly attached to the gill filaments where it sucks blood and injures tissue. The young hatch from eggs. The larvae swim about and attach themselves to other fish. Under over-crowded conditions, losses can mount rapidly. Because these parasites are crustaceans, their membranes are not readily attacked by chemicals. Treatment is difficult. The larvae-infected water should be sand-filtered before being used in other ponds.

4) Another gill parasite is the glochidia of fresh water mussels. These appear as small, round, translucent bodies, visible to the naked eye, attached to the gills where they interfere with the function of the gill. Preventive treatment consists of removing the mussels and filtering the water. The parasite on the gill embeds itself in two hours so that it cannot be touched by chemicals.

5) A disease of fish known as costiasis is due to Protozoa and is characterized by a light grey-blue film on the sides of the body and fins. The fish lose flesh, become weak, do not eat, and die. A slide under a microscope reveals that the slime contains oval flagella-propelled Protozoa. *Costia necatrix* and *Costia pyriformis* are the more common species. Most chemical baths destroy them.

6) Another more heart-shaped parasite of the skin, gill, and fin is the *Chilodon*, vis-

ible under the microscope and effectively treated by chemical baths.

7) Still another protozoan parasite is the *Trichodina*, a saucer-like or flat, slightly curved parasite that can cause white patches on the head and dorsal parts. The disease is called trichodeniasis. Under a hand lens the circular parasite, by means of its cilia, is seen moving rapidly on the body where it loosens scales and damages its host. Chemical baths destroy the *Trichodina*.

8) *Ichthyophthirius multifilis*, the Protozoa that causes pruritis by boring into the skin, may be recognized by little, white swellings on the body where the parasite is embedded. When developed, the parasite leaves the fish, forms a cyst, and multiplies by cell division until the cyst breaks and liberates hundreds of young, each of which swims off in search of a host. Chemical baths and fast flowing water remove the parasite in all but the embedded stage.

Internal parasites usually require two distinct hosts and, therefore, hatchery fish are less likely to be infected than those under more natural conditions due to their incomplete life cycle. However, the flukes, tapeworms, roundworms, and spiny-headed worms occur quite often. Some of the flukes may form cysts in the skin and then segments form around the cysts and black spots appear as a result. The larvae of some flukes occur in the eyes and cause the lens to become opaque with resulting starvation. The adult worms are found in the intestines of some gulls. The gulls become infected from eating parasitized fish. The snail is a partial host and a chemical bath destroys it. The white pelican carries the adult tapeworm (*Dibothrium cordiceps*) that has a larva infesting the muscles and body cavities of trout. Another tapeworm, *Abothrium crassum*, has its adult stage in trout. Kamala (1.5 per cent) mixed in the fish food will remove them.

An intestinal Protozoa, *Otomitus salomonis*, causes fish to become emaciated and oftentimes corkscrew through the water. A microscopic finding plus evidence of enteritis will diagnose this parasite. Finding a flagellate with no pathologic condition does not identify the causative agent. This is to be considered, as many waters are full of amebas and other nonpathogenic Protozoa.

Coccidia attacking the intestinal epithelium especially near the ceca have been reported in trout.

The third group, consisting of the infectious diseases, is not well organized. We know that a disease of salmonid fishes, white fish, and Dolly Varden trout called furunculosis causes open body sores and septicemia. A bacterium best known as *Bacterium salmonicida* is the etiologic agent. A bacterin has proved effective in feeding trials. Other diseases such as ulcer disease, gill disease, peduncle disease, and fin rot have incriminated other organisms. A number of fungous infections have also been worked out in detail. Proper bacteriologic methods and the absence of other factors readily incriminate the pathogen.

For the miscellaneous group there still remains a variety of fish conditions that need scientific study. One of them is pop-eye, a clinical entity characterized mainly by an exophthalmus. Another is goiter, a condition of enlargement of the thyroid. Still another is anemia, where the normal, rainbow trout blood count of 1,220,000 red blood corpuscles per cubic centimeter drops to 500,000. Other disease entities that, aside from their descriptive name, are unsolved are white spot disease and soft egg disease.

Most veterinarians enjoy the sport of fishing and many are expert fishermen. They should be able to advise owners on farm pond, state, and private fish culture, and if they apply their talents to local problems it will result in bigger fish and better fishing.

Mortality of Human Tuberculosis.—Despite wartime conditions, the mortality from tuberculosis was down to 40.1 per 100,000 in 1945 compared with 240 per 100,000 in 1890. The present death rate from tuberculosis in Venezuela is 233 per 100,000 and in Brazil 250. Quoting from *Public Health Reports* (June 6): "Every year tuberculosis claimed the lives of thousands of children. Young men and women who had arrived at the period when one is most productive were facing death when a diagnosis was made. Because little had been done to slaughter tuberculous cattle, bovine tuberculosis attacked our citizens, and extrapulmonary tuberculosis was widespread."

The gap between the farmer and his veterinarian is greater in 1946 than it was twenty-five years ago.—*W. L. Baird, Waukesha, Wis.*

Feed Industry Urges Better Poultry Disease Control

Realizing that the poultry-feed business can be profitable only if poultry production is profitable, spokesmen for the feed industry (*Feedstuffs*, July 12, 1947) are urging dealers to give more attention to prevention of disease. In emphasizing the need for scrupulous sanitation to prevent infections from spreading, they point out that "feed men can do a valuable job in the actual prevention of the spread of infectious diseases and in the education of customers along these lines."

What Is a "Veterinary Remedy"?

Reading over-the-counter advertisements on animal-disease remedies, frequently referred to consumers as "veterinary remedies," brings up several questions, foremost of which are:

- 1) Does the merchant use the veterinary angle to mislead purchasers into believing that the product is what the veterinarian would prescribe?
- 2) Does he imply that veterinarians in general, approve the products advertised?
- 3) Does he profess to offer the product of a faithful member of the profession?
- 4) Or, is the product one of the shenanigans used by the dollar-crazed interest fool people?

Answers to these questions, doubtless checked by experienced practitioners, may make something for high authorities to consider.

Repercussion of the war on the population of the U.S.A., as compared with that of the big countries involved, is shown in the tuberculosis mortality. Despite the favorable state of housing, shifting of large groups, and severe working conditions, the death rate from tuberculosis declined during the four years of our active participation in the war.—*From J. Am. Health Rep., Apr. 4, 1947.*

The development of better methods of control, diagnosis, and treatment of tuberculosis is one of the most pressing unsolved problems facing the medical profession. *Current Comment, J.A.M.A., June 1947.*

Historical Sketches and Memoirs

IV. Organized Veterinary Medicine (Continued)

L. A. MERILLAT

Chicago, Illinois

7.

At the time I went off to college to garner the orthodox ken of the period and afterward, when I joined up with a big practice as an assistant, it was already too plain that veterinary medicine as a profession was afflicted with some kind of sickness. Education was in a state of wiggly alsy and organization was trapped by a precarious dystocia. The livestock industry was growing in leaps and bounds and veterinary science, undeveloped as it was, was trying to muscle in, catch-as-catch-can.

There was neither plan, nor law, nor marching order for the students who were crowding the study benches of the Ontario, American, and Chicago colleges. Kansas City, Indiana, Grand Rapids, and others were still unborn. The graduates were settling for practice in virgin territory (for graduates) all over the country. Important cities like Sioux City, Rock Island, Peoria, South Bend, St. Joseph, Denver, Los Angeles, Kankakee, were yet to see a graduate veterinarian. There were one each (rarely two) in Cincinnati, Indianapolis, Columbus, Cleveland, Toledo, Kansas City, Milwaukee, Des Moines, Omaha, St. Louis, Minneapolis, Pittsburgh, San Francisco, Rochester, Memphis, and cities of that size. Boston, New York City, Philadelphia, and Chicago were well provided with college graduates along with a large cohort of "nonomes." Lexington, Ky. (Hagyard), Bloomington, Ill. (Williams), and Kankakee, Ill. (Martin), were among the first rural districts out west to attract and permanently support outstanding veterinarians in the 1880's.

This scattered deployment of veterinarians eligible for membership in the associations—formed and contemplated—was to be taken into consideration in adjudicating fairly the slow progress of organized veterinary medicine. The question as to whether the better element of the self-educated group should be taken into the membership had not been settled. "Down

with the quack," won out and down went a lot of men who had not only watched over the health of domestic animals since colonial days but gave birth to organized veterinary medicine and filled high places in the associations they had founded. I am thinking of Jennings (New Jersey), Michener (Pennsylvania), Bowler (Ohio), Thayer (Massachusetts), R. Wood (*ibid.*), C. M. Wood (*ibid.*), Copeman (New York), Burden (*ibid.*), all nongraduates whose names are indelibly engrossed on the pages of AVMA history. They started it and they manned its offices until sleazy education ruled them out. They had no diplomas. Many of the middle-aged ones I met in the line of duty on coming into the profession had no diplomas because in their day there were no mills to grind them out. They were contemporaries of John C. Calhoun, Henry Clay, and Horace Greeley.

If the twenty-five or thirty years preceding my coming into the picture have been called the "Do Nothing Period" of organized veterinary medicine, only the slowness of organizing was meant, and much of the slowness was due to ruling out the nongraduate founders from membership. We thought it smart to cultivate hatred for men more capable than us.

At this late day, I am still sticking out my neck by taking sides on the hotly debated, and all but forgotten, question of admitting the self-trained doctors into the membership of the forming associations. It is now evident that the medical profession was less discriminating against the doctors who came up the hard way and did not suffer from having done so. Whether a few quick-made college doctors of mixed quality were wise in not having built up a more numerous personnel by cultivating a spirit of collaboration with the capable veterinary surgeons of the pre-college period, as the medical profession wisely did, is now more clear. There is pride in having a diploma certifying to a formal training, but the cost of the pride in our case was too high in the nineteenth century.

We lost not only members but also the influence of many men of quality and great affluence among the better element of livestock owners. For many years, the inexperienced diplomate didn't have a ghost of a show against the better informed and experienced of the self-made group, and, besides, all of the latter turned against them and their projects because of the discrimination. It was strange how these first diplomas were thought to empower the holders to go out and change the direction of the wind.

8.

Nevertheless, important headway was made in building up a veterinary service. For example, it was the USVMA that induced the Congress to pass a law providing that veterinarians of the cavalry arm shall be graduates of veterinary colleges (G. O.

36, March 27, 1879). But, **Founding of the BAI** the founding of the Bureau of Animal Industry by Act of Congress, May 27, 1884, was the culmination of years of effort by the agricultural interests, not of the Association. On the contrary, prominent figures protested against the founding of the Bureau and for some years wrote uncomplimentary remarks about its work and its personnel. The attitude is shown in the fact that this greatest event of American veterinary history was not discussed at the annual meeting of the USVMA at Cincinnati which was six months after its founding, nor did the *American Veterinary Review* publish anything about the new Bureau in the whole volume of 1884-1885, except a letter (without comment) from Chief D. E. Salmon announcing the members of his staff (*Am. Vet. Rev.*, 8, Nov., 1884 : 275). The Review, formerly owned and operated by the Association, had passed into the private ownership of Alexandre Liautard, H.F.R.C.V.S.*

Among regrettable things one has to say about both state and national associations were the trumped up diatribes against the new Bureau. These flashes of diabolical indignation against the U.S. BAI declined somewhat after its pathologists discovered the arthropod vector of bovine piroplasmosis during its adolescent years, laid down a plan for mastering hog cholera just after

*A. Liautard used a variety of degrees during his American sojourn, usually M.D., V.M. This anglicized degree is the one he used in the 1880's.

the turn of the century, and became hot to handle in print after extrapulmonary tuberculosis in millions of children was "taken for a ride" on the success campaign against milk-borne tuberculosis. Yet, as late as 1946, to a widely popular dog magazine—*Dog World* (the JOURNAL, 109, Aug., 1946 : 132)—the persons in our disease-control machinery were a bunch of "Washington payrollers." There was always a reactionary few to pounce on any movement that would interfere with their Golgotha of deadly infections—the latter case, rabies.

Dr. Elisha F. Thayer,† Newton, Massachusetts, fifth president of the AVMA (1869-1870) and his colleague Dr. George B. Ladd, U. S. Commissioner of Agriculture (1885), were generally credited with having played an important part in having Congress pass the Act creating the Bureau. His (Thayer's) successful stamping out of bovine contagious pleuropneumonia in England was the talk of the hour.

For the influences mobilized to found the BAI one reads *The History of the Bureau of Animal Industry* by U. G. Houck, V.M.D., 1924. I would like some one to point out a more unforgettable moment than the failure of organized veterinary medicine (such as it was) to praise the Commissioner of Agriculture for having succeeded in establishing a government bureau by an Act of Congress designating that a veterinarian shall be its chief. I must have heard the echo of that Act of Congress long ago when B. T. Simms was chosen as chief instead of any one of the hundred or more Ph.D.'s who might have been occupying that high office. Yes, friends, there is a lot of unwritten veterinary history to put on record for the good of posterity.

At this moment there is but to tie local groupings to the state organizations and get on the way to total fulfillment.

†Elisha F. Thayer (1815-1889) belongs in the list of foremost American veterinarians from both standpoints of education and achievement. He received an honorary degree of M.D., University of Vermont, 1869, and attended both the Royal and Dick (Dick) veterinary colleges in the 1850's. He held important federal and state offices in the sphere of livestock sanitation. The meager credit given him in the veterinary literature of the nineteenth century is a blur on the escutcheon of organized veterinary medicine. He did not happen to have one of those short-cut diplomas and probably would have had to reject one as a gift to maintain the rating he had attained. See "Veterinary Medicine in History," vol. 1, page 186, for his biography.

became too extrapulmonary of children successful tuberculosis. patronized the JOURNAL, personnel of were a cohort. There were a bounce upon interfere with sons—in the 1869-1871), B. Loring, future (1881- with having having the the Bureau, piping out of nia in New ur. found the the Bureau Houck, B.S., come one to sole memory veterinary praise the for having governmental designating chief. You that Act not was chosen of the hundred now be es, fellows, veterinary his- good of the to tie the organization fulfillment of in the list from both the ment. He held of Vermont, and Royal 50's. He held the sphere of credit given to the nineteenth of organized to hold one probably would attain the high military graphy.

its duty to the people. During most of the developmental period the associations were poorly patronized and, in general, financially stranded. Balance sheets of state associations were mostly written in two figures. When I was elected secretary of the AVMA in 1916 after a long tenure as secretary of the Illinois association, the roster of the former contained but 800 members in good standing out of a potential 10,000, and a treasury of \$0.00. Its total property was a filing cabinet worth about \$18.00. At the turn of the century, which the three-score-and-timers well remember, dragging members into associations was an uphill pull.

9.

What the history-minded have kept in mind is that, from the time the national association was renamed USVMA in 1863 until the election of Rush Shippen Huidekoper to the presidency in 1887, organization was at a standstill, membership meager, general interest nil, and finances impoverished. Outstanding Men in Association Work Illinois, Ohio, Iowa, New Jersey, and Massachusetts had organized state associations with the declared object of affiliating with the USVMA in order that the veterinary gospel might be spread westward where the livestock industry was developing. But, after the appeasement meeting at Cincinnati in 1884, six years had elapsed before another convention could be organized west of the Atlantic seaboard (Cincinnati 1884—Chicago 1890).

What I am putting on record here in connection with the subject of organization as a whole, as well as the "do-nothing period" preceding the 1890's, is not guess work, nor unimportant. The information is integrated from personal contact with men engaged in association and educational work, some of whom were still in the prime of life when I "came on in" and was fortunate to make their acquaintance in the line of duty, namely (and for example):

A. H. Baker, Ill.	C. C. Lyford, Minn.
W. J. Coates, N. Y.	C. P. Lyman, Mass.
T. Bent Cotton, Ohio	Alexandre Llautard,
W. J. Crowley, Mo.	N. Y.
Cooper Curtiss, USDA	M. H. McKillip, Ill.
W. F. Derr, Ohio	John Ryan, Ill.
Wm. Dougherty, Md.	H. R. Ramacciotti, Neb.
Joe Hawkins, Mich.	R. S. Huidekoper, Pa.

J. L. Robertson, N. Y.	M. Stalker, Iowa
D. E. Salmon, USDA	Andrew Smith, Ont.
Olaf Schwartzkopf,	L. C. Tiffany, Ill.
Minn.	W. H. Wray, USDA

James Law, N. Y.

These were some of the men occupying the top echelon of the veterinary profession during a part or all of the thirty years following the earliest date that can be claimed as its birth in the United States and Canada. Alas, I knew most of them well, some very well indeed. Their professional lives were blended with the familiar figures of my own generation, such as:

R. A. Archibald, Calif.	W. Horace Hoskins, Pa.
Roscoe R. Bell, N. Y.	Wm. Henry Kelly, N.Y.
George Berns, N. Y.	L. A. Klein, Pa.
C. A. Cary, Ala.	Wm. Herbert Lowe,
W. J. Connoway, Mo.	N. J.
Chas. E. Cotton, Minn.	G. A. Johnson, USDA
J. E. Crawford, N. Y.	R. S. MacKellar, N. Y.
L. Enos Day, USDA	N. S. Mayo, Ill.
W. H. Dalrymple, La.	E. M. Nighbert, USDA
John F. Devine, N. Y.	C. J. Marshall, Pa.
Adolph Eichhorn,	A. D. Melvin, USDA
USDA	John R. Mohler, USDA
Otto Faust, N. Y.	V. A. Moore, N. Y.
P. A. Fish, N. Y.	S. B. Nelson, Wash.
Paul Fischer, Fla.	J. G. Rutherford, Ont.
Mark Francis, Tex.	Sesco Stewart, Mo.
J. I. Gibson, Iowa	John L. Tyler, Calif.
Ward Giltner, Mich.	W. H. Welch, Ill.
F. B. Hadley, Wis.	D. S. White, Ohio
C. M. Haring, Calif.	

These are, of course, but a fraction of the men who supplied the information that is written into these sketches, together with the young set who completed the fact-finding chain that leads back without a break to the very beginning of things veterinary in this country, to wit:

J. L. Axby, Ind.	D. S. Jaffray, Ill.
W. L. Boyd, Minn.	John Jaffray, Ill.
O. V. Brumley, Ohio	J. V. Lacroix, Ill.
Harry Caldwell, Ill.	A. A. Leibold, Ala.
A. E. Cameron, Ont.	Herbert Lothe, Wis.
D. M. Campbell, Ill.	R. P. Marsteller, Tex.
W. W. Dimock, Ky.	H. J. Milks, N. Y.
A. J. Durant, Mo.	I. S. McAdory, Ala.
R. R. Dykstra, Kans.	I. E. Newsom, Colo.
W. J. Embree, Ohio	B. T. Simms, USDA
T. H. Ferguson, Wis.	C. H. Stange, Ia.
C. P. Fitch, Minn.	J. F. Shigley, Pa.
Col. R. J. Foster,	T. A. Sigler, Ind.
U. S. Army	R. S. Sugg, Ala.
L. W. Goss, Ohio	Harvey Smith, Ind.
L. M. Hurt, Calif.	Cassius Way, N. Y.
Gen. R. A. Kelser, Pa.	E. E. Wegner, Wash.
A. T. Kinsley, Mo.	

Making up these three lists of veterinarians I have personally known, and from whom the facts contained in this treatment of organized veterinary medicine were derived, would be fantastic but for the intention to show that in 1947 there are living veterinarians who actually consorted with the founders of the veterinary profession in this country. The history of our profession *per se* is that short. R. S. Jennings, the forgotten founder of the AVMA in 1854 under the name of the American Veterinary Association, visited the McKillip veterinary staff in 1889 or 1890. He was then living in Detroit. This visit shaped some of the impressions I have entertained about the Association's early politics. The main object of this installment is to authenticate the claim that a great deal of history covering the whole life of the veterinary profession in the United States and Canada can still be written from memory.

(To be continued)

Erysipeloid (Swine Erysipelas) Rash Resembles Scarlet Fever

George W. Stiles, M. D., recently retired BAI pathologist at Denver (*J.Am.M.A.*, July 12, 1947: 953-954), reports the diagnosis of 1,000 cases of swine erysipelas in swine, lambs, and turkeys and discusses the hazards these are to man. The diagnoses were made by serologic tests and/or isolation of the specific organism. The work was done jointly with C. L. Davis, D.V.M., another BAI pathologist. Blood samples from 170 human beings were provided by the Colorado State Board of Health and the University of Colorado, School of Medicine, and personal cases having a history or symptoms of erysipeloid. Of these, 30 (17.5%) were positive at 1 : 50, which was regarded as probable evidence of the specific infection. The human subjects were largely engaged in work in packing-houses or were livestock owners who had handled diseased swine.

The urticarial rash of erysipeloid resembles that of scarlet fever. A young soldier in a Denver hospital, thought to have scarlet fever, reacted at 1 : 1,000 to *Erysipelothrix rhusiopathiae* antigen. A case of erysipeloid of nine years' duration in a 27-year-old employee on a hog ranch,

whose blood was positive at 1 : 400, cleared up with 600,000 units of penicillin.

Effect of DDT on Laying Hens

Rubin and coworkers of the USDA served that as little as 0.031 per cent DDT in the ration of laying hens is harmful to egg production and that that amount definitely reduced egg production and hatchability. The feeding of 0.031 per cent for twelve weeks produced symptoms and death. Although some of the DDT became concentrated in the greater part of it was deposited in body fat.

Symptoms of DDT intoxication as described by the USDA workers in *Science* (26, July, 1947: 410-413) included initial loss of weight, molting, tremors, coördination, torticollis with head down, desire to rest on keel or side, emaciation.

Blood and Meat Spots in Eggs

Nalbandov and Card, University of California, investigating blood and meat spots in chicken eggs, found that they could reduce the incidence of follicular bleeding—and, thereby, the incidence of the spots—by allowing hens to have access to green grass or by feeding them suitable amounts of Cerogras, a commercial product consisting of dehydrated cereal grains. This suggested that there is a factor in grass which prevents bleeding, but preventive feeding tests designed to identify this factor were irrelevant. The preventive qualities of either range grass or Cerogras appear to depend upon external conditions of growth; range grass subjected to heat had lower hemorrhage-preventing qualities than did intermittent batches of Cerogras.

This study, reported in *Poultry Science* (26, July, 1947: 400-409), showed that the problem of blood and meat spots in eggs (previously shown to be at least partly hereditary condition) is widespread. Examination of several thousand eggs from numerous Leghorn flocks, the average incidence of spots was about 25 per cent.

The prevalence of brucellosis in cattle depends upon its prevalence in a given area. Hence, it is predominantly a rural disease.

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SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

Enteric Intussusception from a Tumor Mass

R. L. LEIGHTON, V.M.D.

Springfield, Massachusetts

A SPAYED tan and white female Cocker Spaniel, aged 11 years, was presented at our clinic Dec. 3, 1946, with symptoms of acute abdominal pain. The owner had noted her unusual posture, in which the rear of the body was elevated and the chest and head held to the ground with the forelegs extended. No cessation of appetite or of the passage of normal stools had been seen. Temperature was normal, and the dog's general condition was excellent. The "anxious" facies commonly seen in intestinal obstruction was absent. The condition had been noted for some time, but symptoms had not become severe until shortly before the case was presented.

A freely movable, easily palpable mass was present in the abdomen. A radiograph revealed a mass in the lumen of the intestine (fig. 1). The dog had been examined by me in May, 1946, and no new growth was in evidence at that time. A diagnosis of soft intestinal foreign body was made, and a laparotomy was performed under pentobarbital sodium anesthesia.

At operation, an intussusception of the small intestine was found. No other abnormalities were present on a search of the abdomen. Since it was impossible to reduce the intussusception, an intestinal resection with end-to-end anastomosis was performed. The exact location in the small intestine was not identified. Three hundred cubic centimeters of saline and dextrose were given, and food was withheld for forty-eight hours.

The dog made a quick recovery, first eating its liquid diet of broth eagerly, then handling solid food on the third day. Some loose and slightly bloody stool was passed for two or three days—gradually the stools

became firm, and the patient was discharged on December 16.

Subsequent examination on December 19 revealed some constipation; a palpable mass was present at the site of the anastomosis and this was presumed to be scar tissue. On Jan. 9, 1947, I received a telephone communication from the owner reporting that the dog was doing well, "seemed years younger and was her old self again."

The intussusception was divided revealing, in the lumen of the intestine, a tumor,



Fig. 1—Radiograph showing a mass in the lumen of the intestine.

which had begun to become necrotic, and around which the small intestine had invaginated itself. The specimen was preserved in formaldehyde solution and sent to the Army Institute of Pathology, Washington, D. C. This most excellent service sent slides and a report from which I quote:

The new growth is attached to the submucosa and extends to the muscularis. It projects into the lumen and its surface is ulcerated and infected. Edema and hemorrhage are extensive in the tumor and the adjacent intestinal wall. The tumor is made up of interlacing bundles of large, irregularly shaped cells usually spindle-shaped and containing large ovoid or round nuclei. The nuclei usually have a prominent nuclear membrane and contain several

From the Angell Memorial Animal Hospital (Springfield branch), Springfield, Mass.

sharply outlined, deeply staining nucleoli. Mitotic figures are numerous and many are bizarre. Retrogressive changes in many of the cells add to the difficulty of identification. This tumor is believed to be malignant and originates from smooth muscle or fibrous tissue. The former is favored. . . . *Diagnosis*.—Leiomyosarcoma, small intestine, canine.

At their request, the x-ray and further information was forwarded.

An interesting report of a case of intussusception produced by a carcinoma of the cecum in 9 human beings was reported by Philip Thorek and W. S. Lorimer, Jr.,¹ in 1947. This case was felt to be unusual enough to warrant inclusion in the literature, both because of the cause of the intussusception and the type of tumor.

SUMMARY

A report of a successful operation on an intussusception of the small intestine, the etiologic factor being a malignant tumor of the musculature of the small intestine, is presented.

¹Thorek, Philip, and Lorimer, W. S. Jr.: Retrograde Intussusception. *J. Am. M. A.*, 133, (Jan. 4, 1947): 21-23.

How Morphine Kills Pain

The facts that the adrenal glands produce adrenalin under conditions of extreme stress and that excited people do not feel pain were clues to the action of morphine in tests with rats carried on by Northwestern University doctors. They concluded that morphine relieves pain by causing the adrenal glands to produce adrenalin. —*From Science News Letter*.

Penicillin in "Summer Mastitis."—In British experiments, mammary gland inflammation due to *Corynebacterium pyogenes*, sometimes called "summer mastitis," did not respond to intensive penicillin infusion, even when started early in the course of the disease. The treatment did seem, however, to help combat general systemic effects of the local udder infection.—*Vet. Rec.*, May 17, 1947.

A standard tuberculin syringe with a $\frac{1}{2}$ -in. to $\frac{3}{4}$ -in. intradermal needle is reported to be a good instrument for injecting local anesthetics prior to teat operations.—*From Auburn Vet.*, Spring, 1947.

Benzedrine an Adjuvant to Morphine

That the pain-killing effect of morphine is augmented when given in combination with benzedrine was reported by Stuart Abel and Stanley Harris of Northwestern University Medical School at the recent meeting of the Federation of American Societies for Experimental Biology in Chicago. They had found this combination especially adaptable to the relief of childbirth pain because benzedrine stimulates respiration, thereby offsetting the respiratory depression induced in the new-born when morphine alone is given. —*From Science News Letter*.

Bleeding in Grey Horses.—It is noted on many occasions that grey horses bleed much more easily than horses of other colors. Today I had the greatest difficulty in arresting hemorrhage which occurred in the course of a minor operation on a grey horse. The operation was one which I had performed many times on other horses with practically no bleeding.—*From diary of Col. C. H. S. Townsend, R.A. J. Royal Army Vet. Corps, May, 1947.*

Varicose Veins in Farm Animals

Varicose veins, when they appear in farm animals, are usually congenital but may result from tumors or swellings around a vein or from toxins in the blood. The blood span ordinarily is not affected, says Paul Rognes in *The Veterinary Student* (Winter, 1947), but the prognosis must be guarded if surgery is contemplated. Treatment consists of dissecting out the involved vein, injecting sodium morrhuate to obliterate the lumen, or surgical removal of the tumor which may be exerting pressure on the vein.

The incidence of bleeding due to passage of the stomach tube through the nose may be reduced considerably in horses and mares by using a 5/16-in. or 3/4-in. tube instead of a 7/8-in. tube. Of course, it is good to keep the tube from touching the floor of the nasal passage.—*W. J. Gibbons, Auburn Vet.*, Spring, 1947.

Nothing makes a reputation for a young veterinarian faster than careful and accurate pregnancy diagnosis.—*D. C. W. Green, Greensburg, Ind.*

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CLINICAL DATA

Clinical Notes

Other sulfonamides are more effective than sulfaguanidine in enteric diseases.—*Vet. J., June, 1947.*

Streptomycin production is expected to reach one million Gm. per month by January, 1948, according to *American Druggist*.

A modified form of gramicidin, reported not to cause sensitization, is hailed in *Science News Letter* as a promising new antibiotic agent for topical use.

Weakness is the outstanding early symptom of human brucellosis. It is followed by chilliness, sweating, and general aching.—*W. W. Spink, M. D., St. Paul, Minn.*

Tonsillitis cases swabbed with 10 per cent silver nitrate developed chorea only one fourth as often as those medicated in other ways but not swabbed. Swab only the tonsils, not the entire throat.—*D. A. Eastman, Miami, Fla.*

Only half the pigs marketed (1/3 the pigs farrowed) in Iowa are sold at a profit. Parasites, diseases, and unbalanced rations retard the growth of the others so much that they actually sell for less than the cost of raising them.—*J. S. Koen, Storm Lake, Iowa.*

Confirming experiences of the Veterinary Corps in the early years of the war, dried egg powder not properly processed is likely to contain pathogenic *Salmonella* and *Staphylococcus*, according to Schneider (*Food Research*, 11, July-Aug., 1946:313-317), who found *Salmonella* organisms in 1.63 per cent of samples of eggs spray-dried after pre-heating and in 18.27 per cent of samples that had not been preheated.—*From Food Industries.*

Para-aminobenzoic acid is a promising drug for the treatment of rickettsial diseases.

Chorea follows or accompanies streptococcal tonsillitis in dogs.—*D. A. Eastman, Miami, Fla.*

Ointments containing antihistaminic drugs are gaining popularity in the treatment of itching dermatoses.—*Case Report, J.A.M.A., July 5, 1947.*

Sodium iodide intravenously and potassium iodide orally are regarded as promising agents for the treatment of trichomoniasis in bulls.

Benzene hexachloride appears to have about a 15 per cent edge over DDT in killing mosquitoes and houseflies, but it won't be put to general use until a technique is developed to eliminate its persistently disagreeable odor.—*USDA.*

Streptomycin in Plague.—Dr. Karl F. Meyer of the University of California reports that streptomycin controlled pneumonic plague in 90 per cent of mice under test and that there is every reason to believe that it will be equally effective in man if given early.—*Sci. News Letter, July 5, 1947.*

Foul Brood Yields to Sulfa Drugs.—American foul brood (*Bacillus larvae* infection), a \$4 million menace to apiculture, was found to yield to the action of sulfathiazole by Dr. Peter Johnson of the Storrs Agricultural Experiment Station. While the disease affects the bee larvae in the combs, the cure is accomplished by treating the mother bees. Tablets of sulfathiazole dissolved in sugared water consumed by the bees effected cures that apparently are permanent, at least into the second and third year.

DDT Dips for the Control of Sheep Ticks, *Melophagus Ovinus*

H. E. KEMPER, D.V.M., I. H. ROBERTS, D.V.M., C. E. SMITH, D.V.M., and
N. G. COBBETT, D.V.M.

Albuquerque, New Mexico

RANCHERS and farmers have a wide variety of materials from which to choose for the control of the ked or sheep tick, *Melophagus ovinus*. Among these materials are nicotine sulfate, coal-tar derivatives, arsenical compounds, and rotenone. Rotenone is generally employed in the form of ground cube or derris powder, but is often combined with other materials. In either case, if properly used, it is capable of eradicating sheep tick infestations with a single treatment and is being widely accepted as a wholly adequate sheep tickicide. In recent years, the admirable record of DDT as a parasiticide for the destruction of external parasites of livestock prompted investigation of its potentialities as an agent for the control of the sheep tick. This paper summarizes some heretofore unreported work with DDT dips, both in emulsion and suspension form. The purpose of the several tests outlined was to determine whether DDT possessed any advantage over other parasiticides currently employed against the sheep tick. The work described is the result of a search for an inexpensive, stable, and effective preparation, capable of eradicating infestations under farm and ranch conditions with a single treatment. Some attempt also was made to determine the minimum effective concentration of DDT required in the dipping vat. The scope of the work performed involved the dipping of large flocks of sheep, and included post-treatment observations to ascertain not only if the adult parasites were destroyed shortly after dipping, but also the effect of the treatment on pupae and newly hatched keds or ticks.

The literature on the use of DDT in the dipping vat for the single treatment eradication of keds indicates that the chemical has been accepted enthusiastically by several investigators. Cobbett and Smith¹ reported on the early use of dilute DDT suspensions and emulsions, which, though unsatisfactory from a practical standpoint,

were effective in eradicating sheep ticks with no apparent injury to the hosts. Parish² described the completely successful use of 0.2 per cent of DDT in a soluble pine oil-water emulsion. He reported on pen experiments which showed that 0.5 per cent of DDT rendered keds lethal to keds for not less than three days.

MATERIALS AND METHODS

All of the seven tests reported in this paper were conducted on farms and ranches in New Mexico and Colorado, under typical southern field conditions. In each case, the materials were compounded in the laboratory, transported to the farm or ranch, and placed in the dipping vats. Representative numbers of the experimental sheep were examined for the presence of parasites, and the entire flocks were put through the dipping vats. Each animal spent from twenty seconds to a full minute in the swim, and all heads were submerged at least once. All dipping vats were equipped with draining pens, in which the sheep were held for several minutes. The animals were turned out on range or pasture. Representative members of each flock were examined for the presence of parasites at regular intervals following treatment. Where possible, observations were made on the first, seventh, thirteenth, sixtieth, and ninetieth days after treatment. Depending on the size of the flock, no less than 10, and often as many as 100, animals were examined at each observation.

Six experiments involved the testing of DDT in oil-and-water emulsions; this work was performed during the summer of 1945. Except in test 1, in which a flock of Navajo, Romne, and Columbia sheep was dipped, all animals involved were Rambouilletts. Preparation of the emulsions followed the general procedure of dissolving DDT in either a technical grade of benzol or xylol, adding petroleum oil emulsifiers, and mixing the resulting solution with water. In test 1, soap powder and saponin were used to emulsify the DDT solution. The remainder of the emulsions were made with commercial emulsifiable petroleum, commonly referred to as soluble petroleum. Two of the emulsions contained 0.1 per cent DDT, one 0.145 per cent, one 0.15 per cent, and two 0.20 per cent. Solvents, oils, and emulsifiers were kept at a minimum, and in

From the Zoological Division, Bureau of Animal Industry, Agricultural Research Administration, United States Department of Agriculture.

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did the total of these materials exceed 1.60 per cent of the contents of the dipping vats.

Test 7 involved the use of a suspension of a commercial wettable DDT powder in water. The dipping vat contained 0.2 per cent of DDT. A large band of range sheep of mixed breeds, chiefly Rambouillet, was dipped in the usual manner in July, 1946.

EXPERIMENTAL RESULTS

The pertinent data are given in table 1, which shows the formulas of the dips used, the number of sheep dipped, and the post-dipping observations made. Additional information on each test is given in the text which follows.

Test 1.—Approximately two thirds of the adult ticks in the fleeces of several animals were dead within four hours after dipping. After seventy-two hours, several ticks were found to be still quite active. A dozen sheep were examined one week after

treatment, revealing only 2 living ticks. The minute examination of 100 animals three weeks after dipping again revealed 2 live ticks. Some seven weeks after treatment, 100 sheep were again selected at random for examination. All but 2 lambs were free of infestation; on the 2 positive lambs, a total of 4 viable ticks were found.

In connection with the dipping operation, it was noted that some 20 per cent of the adult ewes were temporarily narcotized as a result of the treatment. The warm water in the vat, as well as the high atmospheric temperature at the time of dipping, undoubtedly resulted in rapid evaporation of the benzene. Inhalation of the vaporized benzene is believed to have produced a partial narcosis which was generally characterized by staggering. Many animals fell down in the corrals after leaving the draining pens, but full recuperation was noted

TABLE I—Summary of Data on the Use of DDT in the Dipping Vat for the Control of Sheep Ticks

Test no.	% of various ingredients in dip	% DDT in dip	No. sheep dipped	Comparative no. of live ticks at indicated no. of days after dipping				
				1 day	7 days	20-30 days	60 days	90 days
1	DDT 0.145 Benzol 0.21 Kerosene 0.21 Soap 0.09 Water 99.345	0.145	1,377	Many	Few	Few	Few	Few
2	DDT 0.10 Benzol 0.20 Emul. petrol. oil 0.30 Water 99.40	0.10	1,131	Many	None	None	None	None
3	DDT 0.10 Benzol 0.20 Emul. petrol. oil 0.30 Kerosene 0.30 Water 99.10	0.10	100	Few	Few	Few	Few	Few
4	DDT 0.15 Benzol 0.30 Emul. petrol. oil 0.45 Kerosene 0.45 Water 98.65	0.15	100	None	None	None	None	None
5	DDT 0.20 Benzol 0.40 Emul. petrol. oil 0.60 Kerosene 0.60 Water 98.2	0.20	183	None	None	None	None	None
6	DDT 0.2 Xylool 0.3 Emul. petrol. oil 1.0 Water 98.5	0.20	1,370	None	None	None	None	None
7	Wettable DDT powder (50% DDT content) 0.4 Water 99.6	0.20	1,063	None	None	None	None	None

after about twenty minutes in each case. No permanent injury to any of the animals was observed and no losses were sustained.

Test 2.—Examination of from 14 to 40 animals at a time, at irregular intervals, during a ninety-day period revealed no viable ticks, beginning with the seventh day after dipping. The 0.10 per cent DDT emulsion appeared satisfactory in every way, except for the fact that a few of the older and poorer ewes in the flock showed evidence of depression and frothing at the mouth several hours after emerging from the dipping vat.

Tests 3, 4; and 5.—These three tests involved the treatment of a single, small, rather uniformly infested farm flock, which was separated into three groups of 100, 100, and 183 animals, respectively. The groups were identified with branding paint. Group A was dipped in a 0.1 per cent DDT emulsion (test 3); group B in a 0.15 per cent DDT emulsion (test 4); and group C in a 0.2 per cent DDT emulsion (test 5). After treatment, the animals were turned out to pasture as a single flock. A sizable segment of group A was examined a week following treatment. One live tick was found on each of 2 animals at this time. Thereafter, during a period terminated ninety days following the date of dipping, observations made at regular intervals revealed a few live ticks on each occasion.

The 0.15 and 0.20 per cent DDT emulsions employed in tests 4 and 5 apparently were successful in eradicating heavy ked infestations. No viable ticks were found at any time beginning one week after dipping, and extending over a ninety-day post-treatment period.

The emulsions employed in tests 3, 4, and 5 were not known to have resulted in discomfort or injury to the treated animals.

Test 6.—The 0.2 per cent DDT emulsion used in this experiment was completely successful in destroying all ticks within twenty-four hours. Examination of the flock at irregular intervals for a period in excess of five months revealed no viable keds at any time. The sheep suffered no injury as a result of the treatment.

Test 7.—Wettable DDT suspensions containing 0.2 per cent DDT appear to be fully as effective as DDT in oil-and-water emulsions of equal concentration. No live ticks were found at any time during the ninety-day observation period. The wet-

table powder remained in suspension satisfactorily during the dipping operation. Following delays in the dipping process, when animals were being driven up to the holding pens, or after a one-hour recess at noon, the vat contents required vigorous stirring. At all other times, however, the agitation provided by the passage of sheep through the vat prevented settling of the DDT.

The treated sheep sustained no apparent injury, and the DDT powder deposited on the wool did not appear to be objectionable in any way and apparently produced no visible injury.

DISCUSSION

On the basis of the seven tests, involving 5,324 sheep, reported in this paper, it is safe to conclude that sheep tick infestations may be effectively controlled, at least under some circumstances completely eradicated, by a single dipping in DDT preparations. Eradication of heavy infestations have been achieved, under average farm and range conditions, by the use of 0.2 per cent DDT in emulsion or suspension form. Less than 0.2 per cent DDT in the dipping vat will reduce the infestations markedly, but cannot be depended upon to eradicate the parasites.

Emulsions are generally highly satisfactory for use in sheep dipping vats. For one thing, if properly prepared, the concentration of the parasiticide is certain to be uniform throughout the swim, and for another, the passage of large numbers of animals through the vat is not likely to dilute the contents toward the end of the dipping operation. On the whole, however, wettable or water-dispersible preparations are the precise answer to the stockman's need from the standpoint of simplicity in operation. Proprietary, wettable powders may be readily purchased and require no complex preparation for use.

It should be noted that kerosene and heavy petroleum oil, either alone or in combination, were employed in the preparation of the DDT emulsions described in this paper. Studies by other workers, performed since the date of our earlier experiments, indicate that oils of this nature are perhaps questionable vehicles for the application of DDT to livestock. Rue and Parish,² as already stated, successfully used and recommended a 0.2 per cent DD_T saponified pine oil emulsion.

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On the basis of one rather unsatisfactory experience (test 1), we abandoned the use of benzol in the dipping vat as a DDT solvent in favor of xylol. No injury to sheep has been noted by us from the inclusion of xylol in DDT emulsions.

Some attempt should be made to evaluate comparatively the merits of DDT and rotenone dips. In this connection, the fact should be borne in mind that cube and derris powder dips have been subjected to several years of field use, involving many thousands of animals, dipped under a wide variety of conditions. DDT dips have, of course, no such record of experience. For this reason, a just comparison between the two types of dips cannot yet be made. When available considerations are weighed, however, the authors of this paper, who have employed both classes of materials in the field, are inclined to favor the use of cube and derris suspensions over either DDT emulsions or suspensions.

Cube and derris powders can be used in the crude form and require no solvents, detergents, or diluents, other than water. These suspensions can be applied to sheep for only a fraction of the cost of commercially prepared DDT concentrates. Because rotenone suspensions are cheap, dipping vats can be emptied, cleaned, and filled with fresh material more frequently and economically than vats filled with higher priced materials. The safety factor involved in the dipping operation is emphasized with the use of cube and derris powders; rotenone is quite harmless under almost any circumstances, while DDT admittedly may prove toxic if improperly used. Finally, from the standpoint of effectiveness, rotenone leaves very little to be desired. Complete eradication following a single treatment in dilute cube or derris mixtures has been achieved repeatedly in many hundreds of southwestern range flocks. These materials are lethal to existing sheep ticks, and apparently adhere to fleeces of treated sheep sufficiently long to destroy any young ticks which emerge from pupae remaining in the wool after dipping.

SUMMARY AND CONCLUSIONS

1) A single dipping in oil-and-water emulsions, or aqueous suspensions, containing 0.2 per cent DDT eradicated sheep tick infestations from southwestern farm and range flocks.

2) Single dippings in oil-and-water emulsions containing 0.15 per cent DDT or less failed to eradicate tick infestations in two of four tests.

3) In preparing dips containing organic solvents for DDT, the inclusion of benzol should be avoided, and the use of xylol is suggested in its place. Kerosene and heavy petroleum oils, small amounts of which were used in preparing the DDT oil-and-water emulsions, appeared to cause sheep little or no discomfort. No evidence is offered, however, to recommend the use of petroleum oils in the sheep dipping vat.

4) Aqueous suspensions of DDT are easily prepared, and if properly used are suitable for practical farm and ranch use.

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Brucella Melitensis in Cow's Milk

A report issued by the U. S. Public Health Service (*Pub. Health Rep.*, July 25, 1947) amplifies the human disease potential of *Brucella melitensis* in cow's milk. Previous isolations of the melitensis species from cow's milk in New York and California are cited in connection with a study made by Damon and Fagan of the Indiana State Board of Health, assisted by Hutchings of Purdue University and Huddleson of Michigan State College.

A sample of human blood gave a complete reaction with *Brucella* antigen in 1:40 dilution and partial reactions in dilutions up to 1:320. Organisms were not recovered from cultures, but an "aberrant abortus" was recovered from inoculated guinea pigs. The patient was a farmer who owned 9 cows; 8 of them were brucellosis reactors and 4 had aborted. Cultures of milk from these cows were negative, but *Br. melitensis* (confirmed by Huddleson) was recovered from an inoculated guinea pig.

A total of 320 confirmed outbreaks of fowl pest in Great Britain has been traced to the feeding of swill containing offal of unevacuated poultry imported from the continent.

A Symposium—The Veterinarian in Public Health Work

At the Boston Session of the Association, August 18-22, 1946, the following symposium was conducted in the Section on Sanitary Science and Food Hygiene. The members of the symposium were Dr. James H. Steele, Washington, D. C.; Dr. V. A. Getting, Boston, Mass.; Dr. Martin D. Baum, Los Angeles, Calif.; and Dr. Paul J. Brandly, Washington, D. C.

Veterinarians in Public Health and the Rôle of the Private Practitioner

JAMES H. STEELE, D.V.M., M.P.H.

Washington, D. C.

THE VETERINARY profession in public health has had a most diversified experience. In some areas of the country, the veterinarian is considered an integral part of any well-balanced public health team. And in other parts, although rarely, he is unknown among professional health workers. What are the reasons for the widespread diversification of thought on the value of the veterinarian as a public health officer?

There are, no doubt, many reasons but they all crystallize in the word "education." By education we can imply just about any thing we desire. To be specific, the education of policy-making groups to the value of public health veterinary services is needed. How this may be accomplished I will discuss with you gentlemen.

In public health, there are two divisions of operations as in any other government or business operation; namely, policy and executive. The division of planning or policy-making in public health activities usually is the state, county, or city board of health. This is the legislative and policy-making body which plans and evaluates the broad strategic objectives of the executive division of public health operations.

The division of public health operation is the administrative or executive division which carries out the directives of the policy-making group. The executive division consists of the health officer who, in many cases, is also a member of the board of health or equivalent group. Besides the health officer, the field division has public health nurses, educators, dentists, engineers, entomologists, laboratory specialists, and veterinarians on the public health team. What the veterinarian has done in the field of public health activities is well known.

Chief of the Veterinary Public Health Section,
States Relations Division, U. S. Public Health Service, Washington, D. C.

Our problem at this time is to plan the future of the veterinarian in public health and to broaden our representation at the policy level to fulfill our plans.

This is a rôle that should be filled by the private veterinary practitioner, as is with other professions. The medical, dental, engineering, and nursing representatives are all drawn from the private ranks of their respective professions. But it should not be assumed that the veterinarian will become a member of health policy groups without effort on his part. It will take careful education, if we can use that word in a broad sense. Public health is one of the most progressive movements in government today, and the service is very receptive to new ideas for the improvement of man's health and his environs.

Public health has been a growing expanding field for the past fifty years. During that time many original concepts have been radically changed or discarded entirely. On the other hand, some of the early ideas of public health have not been fulfilled in all communities. One of the concepts that has not been fulfilled and of direct concern to the veterinary profession is the representation on boards of health of all professions and persons who are concerned with public health. Many people have written and spoken of the omission for years but none so well as Lemuel Shattuck. Lemuel Shattuck, who is considered by many to be the founder of public health in the United States, expressed this view in a sanitary report made in 1850. He was chairman of the Massachusetts Sanitary Commission which made a sanitary survey of that state. The following are excerpts from that report which has become a classic in public health literature and documents.

1) [That] The state public health laws be revised and improved, and that a general board of health be appointed. This board should be composed of two physicians; one lawyer, one chemist or scientist, one civil engineer, and two persons of other occupations or professions.

Shattuck did not believe that the members of the board of health should be selected exclusively from one profession but that all professions and related skills to public health must be represented. His reasons were as follows:

1) Numerous questions, requiring a knowledge possessed by different professions, will be presented for discussion and decisions, and it is desirable that the Board should be able to bring competent knowledge to the investigation of every subject.

2) To show to all that the promotion of public health is a matter which does not belong exclusively to the medical profession, but concerns every profession and every person. The idea which too generally prevails, that everything relating to health belongs to one profession, operates against sanitary improvement. The services of medical men are indispensable; but the services of other professions, and of every person in their respective spheres, must be put in requisition before reform can be complete.

The reasons that Mr. Shattuck presented in the report of the Massachusetts Sanitary Commission are applicable today, probably even more so than 100 years ago. The rapid advances in science have made it impossible for any one profession to assume they are the masters of public health. The representatives for veterinary medicine must naturally be chosen from the ranks of the private practitioners. How these men are chosen by their state, county, or city boards of health is a local government function. But as a profession we are concerned that they are the best representatives in the community or, if state representatives, that they are the best selections in the state.

To prepare veterinarians for their rôle in public health, the colleges of veterinary medicine should give introductory courses to public health administration and practice at the undergraduate level. The technical courses in public health for the undergraduate are essential, but we must prepare our profession for the responsibilities of the future. If the veterinarians wish to participate in formation of the national, state, and local health policies, they must know the elementary principles of public health administration.

The veterinary representative on a board of health or public health council will carry on the education of the representatives of other professions who are interested in public health. The commissioner of health or the health officer will turn to him for advice in his field or for confirmation of information from sources outside the health department. You can readily visualize that a man of ability in such a position can be one of the most valuable contributors to public health in his community and for his profession.

The problems that come to a board of health are multiple. They vary from complaints about the neighbors' trash pile to serious problems such as the control of epidemics of communicable diseases. Most of the problems that require the opinion of a veterinarian are those involving communicable diseases. They vary from anthrax to tularemia. Some of these diseases are very serious public health problems, others have possible significance, and still others that are thought to have no animal reservoir today may be proved to have such a reservoir in the future.

Brucellosis (*abortus* and *suis*), rabies, salmonellosis, and trichinosis are the veterinary public health problems that are considered most important by health officers in the United States. What we are to do with these problems is the issue that all public health veterinarians and private practitioners must think about.

Brucellosis in man is increasing every year in the United States. The following table taken from *Public Health Reports* shows this definite trend.

The control of brucellosis is one of the

TABLE I—Brucellosis Cases and Deaths Reported Annually in the United States

Year	Cases	Deaths	Case fatality rate
1927	112	2	1.78
1928	669	13	1.94
1929	975	41	4.20
1930	1,453	* 66	4.67
1931	1,578	74	4.68
1932	1,502	82	5.45
1933	1,788	87	4.85
1934	2,017	74	3.66
1935	2,008	90	4.48
1936	2,095	115	5.48
1937	2,675	93	3.47
1938	4,379	118	2.69
1939	3,501	121	3.45
1940	3,310	116	3.50
1941	3,484	71	2.03
1942	3,228	79	2.44
1943	3,734	98	2.62
1944	4,436	82	1.80
1945	5,049	101	2.00

most important contributions the veterinary profession can make to public health and economic progress in the United States. The policy of health organizations has been vague in respect to facing this problem. Here again, the veterinarian, as a member of a policy-making group, can be invaluable in guiding the department of health and establishing close liaison with veterinary regulatory officials of agriculture and veterinary practitioners.

Rabies in the United States has always been an endemic problem which receives attention when there are local outbreaks. From what is known today in regard to rabies, the problem has a solution. The eradication of rabies is not an impossibility in any region or state which desires to face this public health problem. It is up to the veterinary profession to educate public health authorities on what can be done and to assist in the administration of such a campaign.

The diseases due to *Salmonella* organisms have been increasing annually. The increase has been largely due to laboratories becoming aware of methods of isolation and identification. When all our states have given the effort to the salmonelloses that they should receive, then we may expect this disease to be listed as one of the chief causes of gastroenteritis. But again, how many health authorities are informed as to its importance and its reservoirs? There, through the efforts of private veterinarians and their organizations, we can educate health officers, their boards of health, and personnel in health work.

Trichinosis is a complex public health problem due to lack of understanding by health authorities in regard to control measures. During the past war we have lost much ground in its control because garbage feeding has become widespread in most metropolitan areas and also in many rural areas near military establishments. It will take much effort to reform this unwholesome health practice. Educational efforts by veterinarians in all phases of their professional activity will be necessary. The support of your local and state health departments will be much appreciated by those responsible for health work. And, where you feel the problem has not received the attention it merits—then it will be our responsibility to inform the authorities of the importance of trichinosis control. There

are many other diseases of man that of animal origin that are significant to the health of any community. They are always present, but if they should become a threat to the health of the community the veterinarian should be ready to give assistance and aid to the health officials in their diagnosis and control. The public practitioner is the first line of defense. With him lies the responsibility of diagnosis and report of the disease to the state and agriculture officials. The influence that veterinarians may have on health in their local communities is immeasurable and through state veterinary associations much can be done to stimulate government health agencies to recognize the importance of animal diseases as a threat to human health.

Is it necessary to condone the existence of brucellosis, rabies, and trichinosis as threats to the health of our country? Some do not believe it is so. Through the educational efforts of every veterinarian, we shall arouse a public desire for the eradication of animal-borne diseases that are threats to the health of man.

Veterinarians in Public Health

V. A. GETTING, M.D.
Boston, Massachusetts

Veterinarians have an important rôle in the protection of public health. This is especially true now in the control of insect-borne diseases, as more of these are likely to be imported from the cataclysmic shifting of populations brought about by war. With increasing and more extensive transportation facilities and the establishment of a central facility for transportation of insect vectors, particularly of diseases which are common both to men and animals, the veterinarian assumes an important rôle in addition to that which he already has in the control of food-borne disease. From brucellosis to the increasingly larger problem of *Salmonella* infections, spread by infected food, to rabies, trichinosis, and many other diseases, the veterinarian can assist in epidemiologic investigations and the planning of proper controls.

The veterinarian should, of course, in addition to his basic training, postgraduate public health instruction, preferably in a school of public health approved by

Commissioner of public health, Massachusetts
Department of Public Health, Boston.

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American Public Health Association. Such instruction should include the basic public health subjects with special emphasis on veterinary public health practice. Thus, in turn, other students of public health, doctors, dentists, nurses, would benefit from the teaching of veterinary public health, and the veterinarians would obtain a great deal of assistance from association with these other professions.

There is need for veterinarians in all public health departments. They must be offered positions of responsibility, security of tenure, and an income consistent with their training and experience.

Poultry and Meat Inspection in Public Health

PAUL J. BRANDLY, D.V.M.

Washington, D. C.

As Dr. Getting has pointed out, atypical pneumonias and salmonelloses of man are important public health problems.

The recent report of Mitchell, Garlock, and Brock-Kahn emphasizes the seriousness of disease in man which may develop from diseases normally considered to be specifically pathogenic for fowl. In this paper, they report an outbreak of gastroenteritis involving a known total of 423 persons, 172 of whom required hospitalization. *Salmonella pullorum* was incriminated as the etiologic agent. The causes of similar outbreaks, which in the past have remained obscure, will no doubt be reported more frequently with improved diagnostic techniques.

The reports of Meyers and Eddy concerning the extent of the incidence of ornithosis in pigeons, and the isolation of this [psittacosis] virus from chickens along with human infection resulting from contact with ornithosis-infected chickens, require that careful consideration be given the diseases of birds in relation to diseases of man.

It is quite commonly felt that birds are the reservoirs of equine encephalomyelitis, a highly fatal disease of horses and man. Admittedly, we do not recognize all the diseases common to man and birds, but it is known that some 20 diseases affect both man and birds.

Poultry pathologist, Production and Marketing Administration, U. S. Department of Agriculture, Washington, D. C.

It is the duty and responsibility of the veterinary profession to make every effort to control and eradicate these diseases in birds and to prevent their dissemination to animals, including man.

One of the important methods of preventing the transmission of diseases from animals to man is the elimination of diseased animal products and parts from food channels. By keeping the inspection of meats, other than poultry, in the hands of veterinarians, the United States has undoubtedly the finest and safest meat supply in the world. That the same high standard may be achieved regarding poultry and poultry products is hardly likely if the inspection of such products is placed in the hands of those without the necessary prerequisite training in disease.

Veterinary Public Health

MARTIN D. BAUM, D.V.M., M.P.H.

Los Angeles, California

It is a generally accepted fact that the profession of public health is made up primarily of representatives of other professions, particularly the medical and allied fields, who have adopted, either by special training or exposure, public health as their life work. Veterinarians are no exception to this, and many from this profession are engaged either full or part-time by health units throughout the nation.

That the veterinarian has a specific niche in public health and that he can contribute much to its success and progress will not be challenged in the light of outstanding works of research, disease eradication, and food inspection. In spite of these accomplishments, however, the rightful place of the veterinarian has not been realized in the organization of public health work.

At the present time, there is a need for trained veterinarians in the public health profession. If this need is not met by qualified personnel trained in this field, it will be occupied by those in other professions and by laymen who have had no basic training for this work. Many lay personnel who have had just enough exposure to livestock pathology, disease problems, and milk production are dangerous to the veterinary profession and of little value to public health.

Veterinarian, Los Angeles, Calif., Public Health Department.

in this type of work. This group of lay personnel, however, can not be blamed for entering the veterinary field if we are not interested in protecting what is legally and professionally ours.

The medical and public health professions are accepting veterinarians more rapidly than veterinarians are accepting themselves as candidates in this field. Public health is placing demands on us which we should be in a position to meet, both from the standpoint of experience and training.

There have been two primary factors involved in the introduction of the veterinary profession into a recognized place in public health. First, we must be able to produce graduates from our colleges, who have more than just a meager exposure to public health, and encourage our graduates in post-graduate study at public health institutions. And, secondly, the medical health officer should be made aware of the advantage to be gained by employing the services of a well-trained veterinarian for his staff.

Even though a veterinary practitioner devotes his entire time to practice, he is still engaged in the protection of the public health of his community. He should know and understand the functions and activities of his local health agency and be in a position to offer any needed service. This is a civic duty that every veterinarian owes to his community.

Each veterinary college approved by the American Veterinary Medical Association should require, as part of its undergraduate curriculum, courses dealing with public health directly, and also teach the responsibility that the veterinarian has to his profession, client, health department, and public.

In order that this can be accomplished to best advantage, each veterinary college should have one member of its staff fully trained in public health, both academically and by experience. By the same token, each public health school should include veterinary personnel on its teaching staff in order to introduce this phase of knowledge to its students, most of whom are physicians, thereby bringing about a fuller appreciation and respect of each group toward the other.

The formation of a veterinary public health section in the States Relations Division of the U. S. Public Health Service is indicative that the profession is making

headway toward recognition. The promotion of this section should be encouraged in order that an enlargement of its personnel will be possible. A forceful effort should be made to staff every state health department with a fulltime veterinary public health officer. It is just as logical to have such personnel employed by the state level health department as it is to have a similar position in the State Department of Agriculture.

The American Veterinary Medical Association should do everything possible to induce the formation of a veterinary public health section in the American Public Health Association, so that we in the profession who are primarily concerned with this special field will have the means of official expression. Such a section will also serve as a clearing house for interchange of information and maintain our identity as veterinarians. If this is not done, we will continue to be lost in such classifications as "sanitarian" and "miscellaneous." If special sections are in order for the dental, engineering, and nursing interests, why not for the veterinary?

Public health is available to us, and if we don't accept the challenge now, it will be a long time before opportunity knocks again!

Human Anthrax on the Increase

The U. S. Public Health Service (*J.A.M.A.*, July 12, 1947:958) reports an increase of 16 per cent in the incidence of human anthrax for the period 1939-1943 and, contrary to former beliefs, occupational contacts with animal products (leather, hides, wool, animals) were not found to be the universal source of the infection. One of the patients was a child in a mining region where anthrax in animals had not occurred during the ten years surveyed; some were in housewives probably exposed while gardening, while others were traced to shaving brushes, tooth brushes, and a fur coat. One was a case of septicemic anthrax in a middle-aged man who had had none of the usual means of acquiring the disease. Cowdery (*Arch. Path.*, 43, Apr., 1947:395) believes that anthrax in man can no longer be dismissed as an occupational disease.

Penicillin tooth powder is under test as a caries preventive.

Control of Pneumonia in Swine with Sulfamethazine

HERBERT F. HARMS, D.V.M., and PETER H. LANGER, V.M.D.

Pearl River, New York

IN THE late fall of 1946, an outbreak of a respiratory infection, with high mortality, occurred in a herd of pigs on a New York farm. This farm was a garbage-feeding plant with little sanitation and poor management. Water was supplied to the animals in barrels, but there was also free access to a small pond which contained several dead pigs and was covered with algae and scum.

The herd consisted of 235 pigs of mixed breed, varying in age from about 12 weeks to 2 years. The majority of the animals weighed from 35 to 50 lb. Some of the young ones had been farrowed on the premises, but the greater number had been purchased in neighboring communities or imported. The animals were fed raw garbage. All had been vaccinated against hog cholera about three weeks before the outbreak.

CLINICAL DESCRIPTION

The initial symptoms, observed about one week before the start of treatment, were loss of appetite and lethargy in many of the animals. The severity of the outbreak increased rapidly until there were 8 to 10 deaths per day. On examination, the visible symptoms were difficult respiration, with considerable "thumping," severe cough, a moderate mucous discharge from the eyes and nose, and, in some cases, epistaxis. The animals crowded together, were reluctant to move, and showed a state of deep depression.

GROSS PATHOLOGY

Several of the animals that had died during the previous night were examined postmortem. Pneumonia was evident in all of these, but the picture was clouded by postmortem changes. Acutely ill animals were sacrificed for postmortem purposes. One animal showed slightly enlarged and congested submaxillary lymph nodes. The trachea and bronchi appeared normal in all pigs thus examined.

Practitioner (Harms), and veterinarian (Langer) in Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y.

In some cases, certain portions of the lungs showed congestion and edema. The cut surfaces yielded an abundance of bloody, frothy fluid. Several anterior lobes were dark red and of liver-like consistency. In others, the diaphragmatic lobes exhibited extensive consolidation and pus formation. These were firmly attached to the parietal pleura by a fibrinous exudate. Cut surfaces revealed numerous fibrotic areas and abscesses containing thick, creamlike pus.

A diffuse, congested appearance of the mucosa of the urinary bladder was observed in 1 case. The heart, liver, spleen, kidneys, and the gastrointestinal tract did not reveal any significant gross abnormalities.

In accordance with these postmortem findings, a diagnosis of fibrinous lobar pneumonia in both early and advanced stages was made.

BACTERIOLOGY

Lewis and Shope¹ demonstrated that the symptoms of swine influenza cannot be reproduced with pure cultures of *Hemophilus influenzae suis*; and Shope^{2, 3} later showed that the disease induced by the filterable virus was not typical influenza and that *H. influenzae suis* is constantly encountered in culturing the respiratory tracts of animals with typical swine influenza. Lewis and Shope¹ and Hagan⁴ proved that the combination of the organism, *H. influenzae suis*, and the filterable virus is essential for the production of typical swine influenza, and that the disease cannot be induced by the virus alone, or with pure cultures of the organism alone. Runnells⁵ reported that many pneumonias occurring in the acute infectious diseases owe their origin to an organism which invades the lungs after the primary causative agent has already initiated a rather mild inflammatory process, and that, in swine pneumonia, *H. influenzae suis* often is the secondary agent.

A specimen of heart's blood from 1 animal gave no growth after seventy-two hours when streaked on blood agar. Tissue from a lesion in the lung was streaked on blood agar and on Bacto SS agar. No growth

was obtained on the SS agar. Small, transparent colonies, surrounded by a narrow zone of *beta* hemolysis, appeared on the blood agar after forty-eight hours and were used as primary cultures. Those colonies were then transferred to a yeast bouillon medium in which light growth occurred in twenty-four hours at 37 C.; these organisms were short, gram-negative rods. Subcultures made on chocolate agar yielded profuse growth within twenty-four hours. The culture failed to grow in standard diagnostic mediums in the presence of any of the following sugars or alcohols: arabinose, dextrin, dextrose, dulcitol, galactose, glycerol, inositol, inulin, lactose, maltose, mannositol, mannose, raffinose, salacin, sorbitol, starch, sucrose, trehalose, and xylose. The organism failed to grow in litmus milk, and it did not produce hydrogen sulfide or indol. Nitrate was not reduced in the medium employed.

An emulsion of a portion of the lung tissue was prepared and 0.5 cc. injected intraperitoneally into 3 mice. All of the mice died within twenty-four hours. An organism was recovered from the heart's blood of each mouse in pure culture, which, when grown on differential mediums and within the limits of available diagnostic procedures, was shown to be identical with the organism grown directly from the lung on solid mediums. The morphologic, tinctorial, and cultural characteristics of this organism were similar to, but not identical with, those described by Lewis and Shope¹ for *H. influenzae suis*.

TREATMENT

In 1942, Pittman,⁶ of the U. S. Public Health Service, reported the effective use of a pyrimidine, sulfadiazine, in the treatment of *Hemophilus influenzae* infection in man. For this reason, it was decided to use sulfamethazine—dimethyl sulfadiazine—in this outbreak. Sulfamethazine has been proved to be effective in the treatment of acute bacterial infections, both gram-negative and gram-positive. The advantage, in animal practice, of sulfamethazine over the other sulfonamide pyrimidines is that the drug is rapidly reabsorbed from the kidney tubules, and that it has high plasma-binding properties which permit an adequate blood level to persist for twenty-four hours, requiring only once-a-day adminis-

tration. The toxicity of the drug has been reported to be low.

Within the week previous to the start of treatment, 35 pigs (15%) had died. The pigs were divided into three groups for treatment. One hundred animals were given sulfamethazine in mash at the rate of 1½ gr. per pound of body weight the first day and 1 gr. per pound on the second and third days. Only as much mash was given as was readily consumed. Fifty of the pigs were treated intraperitoneally with 25 per cent, weight per volume, sterile solution of sodium sulfamethazine at the rate of 1 gr. per pound of body weight per day on three successive days. Fifty animals were kept as controls. The group of 100 pigs was kept in the original lot. For the purpose of the trial, a fence was installed in a small adjacent lot to permit segregation of the other two groups.

No other treatment was used, and there were no changes in management and routine.

DISCUSSION

During the first six days after starting the treatment, 11 control animals (22%) died. The remainder looked extremely poor, and more deaths seemed imminent. To avoid further losses, this group was then treated intraperitoneally with sodium sulfamethazine at the rate of 1½ gr. per pound of body weight the first day and 1 gr. per pound the second and third days. There were no further deaths. Practically all coughing had ceased within forty-eight hours, and there was decided improvement in appearance.

There was almost immediate clinical improvement in the parenterally treated animals and a more gradual improvement in those receiving the drug in the feed. No deaths occurred in animals under treatment. Within twenty-four hours, the treated animals were alert, appetites had improved, and coughing had ceased. Six days after starting the treatment, all of the treated animals appeared to be in good health.

Coughing and clinical illness was eliminated within eight days, when all animals appeared healthy; also, all began to gain weight. Seven weeks after the completion of treatment, no further losses had occurred.

SUMMARY

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a herd of swine, with symptoms and post-mortem findings typical of pneumonia, is described. A *Hemophilus*-like organism was isolated.

Sulfamethazine, administered by several routes in several dosages, prevented further deaths and brought about quick recovery of all sick animals.

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An Unusual Case of Gangrenous Mastitis

The subject in this report was a 5-year-old Jersey cow.

This cow freshened at 5 a. m. and developed milk fever. She was treated at 10 a. m. with an intravenous injection of a commercial preparation of calcium gluconate and dextrose which brought about apparent recovery; however, it was necessary to repeat this treatment during the morning of the second day. In the early evening, she was developing a deep purplish discoloration of the right hind teat and the skin of the udder immediately surrounding it which radiated out for a distance of nearly 4 in. This area was distinctly circumscribed, and its temperature was somewhat cooler than the remainder of the udder. There was general depression, toxemia, and anorexia, and the cow was recumbent. Treatment now consisted of an intravenous injection of a calcium gluconate and dextrose solution similar to the one mentioned above. In addition, she received 250 cc. of a 10 per cent solution of sodium sulfathiazole (25 Gm.) intravenously. Two hundred thousand units of penicillin in 100 cc. of sterile distilled

water were infused into the infected quarter.

The morning of the third day when seen again, she seemed somewhat more alert, was standing, and had drunk some water. There was no further extension of the gangrenous process. The udder secretions, instead of being of a slight serosanguineous nature, as they had been previously, were now showing evidence of a slight milklike nature.

On the fourth day the abnormal discoloration had practically disappeared, and the normal pliability of the tissues was nearly restored. In all other physical respects, the cow appeared normal.

A week later there was a desquamation of a very thin superficial layer of parchment-like skin from the entire area that had been previously involved. On the teat near its base were two separated areas of heavy scab formation, each about $\frac{1}{2}$ in. in diameter.

During the next ten-day period, or nearly three weeks after the first attack, milk production had been steadily increasing, and it was then up to 50 lb. per day. Overnight, the entire quarter suddenly developed a pronounced gangrenous condition. Similar treatments were again administered but without success as she was found dead the following morning.

At autopsy, sections of the udder revealed extensive involvement of the entire parenchyma of the quarter which consisted of severe edema, necrosis, and hemorrhage. The remainder of the udder was edematous and somewhat hemorrhagic which indicated a much more complete involvement than had occurred during the first attack.

The interesting point for consideration in this case was the apparent aborting effect, of the first attack, by the immediate application of therapeutic measures. This could likely be the case, as we all know too well the end results when gangrene runs its usual course, as it did during the second attack. It would seem that with a return to the normal physical condition and high milk production, as occurred in this case, there likely was little relationship between the first and second attack. However, this is only an assumption, and it cannot be proved definitely on account of the fact that no bacteriologic examinations were made.—J. F. Bullard, D.V.M., M.S., Lafayette, Ind.

Use of Sodium Sulfonamides as Single Injection Specific Treatment in Foot Rot

C. R. FORMAN, D.V.M., J. E. BURCH, D.V.M., C. E. DEE, D.V.M., L. KELLEY, D.V.M., J. E. MOUW, D.V.M., M. B. TEIGLAND, D.V.M., and J. H. YARBOROUGH, D.V.M.

Fort Lauderdale, Florida

THIS IS the summation of results obtained in 1,500 cases of foot rot treated by intravenous injection of sodium sulfapyridine and sodium sulfathiazole in southern Florida during the last four years. Practically all of these cases were treated in commercial dairy herds. We were familiar with the result expectancy of the drugs previously used on foot rot under our conditions, and we deemed it unnecessary to use control animals. The length of time involved, the number of animals treated, and the superior results obtained with sodium sulfapyridine tend to rule out the possibility of error. All treatments were paid for by the dairymen. All drugs used were purchased by the individual veterinarian at standard market price. The enthusiastic endorsement of this treatment by the commercial dairymen attests to its superiority over other treatments.

Our foot rot cases ran a severe, rapid, progressive course. According to Dr. Burch's description:

Slight supporting leg lameness is first noted; in twelve to twenty-four hours all cardinal signs of inflammation are present. The animal bears only slight weight on the foot when walking, and frequently moves the foot up and down while standing. A necrotic, yellowish gray, adhesive, diphtheritic membrane has now formed at the site of the injury. In another twelve hours (twenty-four to thirty-six hours' duration), movement is limited to a few hops and the animal holds the foot up most of the time. All structures below the fetlock are inflamed, and necrosis has progressed to involve most of the interdigital skin and is $\frac{1}{2}$ in. deep. Systemic reaction has set in. The animal is off feed, milk flow is greatly reduced, and the temperature is 103.5 to 106 F. In another twelve hours (thirty-six to forty-eight hours' duration), some organization occurs and bluish discoloration and hemorrhagic blotches are visible between the digits and around the coronary band of white-footed cattle. Some malodorous, purulent material is present. In another twelve hours (forty-eight to sixty hours'

duration), there are marked constitutional effects: severe dehydration, almost complete agalactia, etc. Breaks around the coronary band are common. Individual cases vary after the third day. Separation of the coronet is common, and the hoof wall may slough. Septic synovitis, tenonitis, arthritis, osteitis, etc. develop. Calcification of the affected bony structure begins and may produce mechanical lameness.

CLINICAL TYPES

Listed in the order of rapidity of their response to treatment, we see the following six clinical types of so-called foot rot based on the location of the lesions. All types are accompanied by marked swelling and severe pain. The first five types are considered to be pure *Actinomyces necrophorus* infections and respond typically to treatment,—disappearance of initial swelling and pain, followed by sloughing of the necrotic tissue, leaving a clean, open wound. The sixth type is believed to be caused by other organisms.

Type 1.—These cases have no visible skin lesions any place; the foot is simply swollen, hot, and painful. The swelling and pain are gone within twenty-four hours after treatment, and no formation or sloughing of necrotic tissue occurs.

Type 2.—This is the "interdigital phlegmon" of Kingman¹ and is the most common form, except in cattle that have been recently shipped. When first seen, there is a small necrotic area in the soft tissue between the digits. If allowed to continue, the necrosis will involve the whole interdigital area and spread up around the coronary band. This is frequently caused by a small stone, snail, or stick becoming lodged between the digits. However, once necrosis has started it continues to spread, even after the offending article is removed. This type responds rapidly to treatment and, regardless of the depth and amount of slough or the amount of mud and manure the animal wades through, it heals rapidly.

Type 3.—The bulbar type occurs principally during wet weather, and is caused by bruising the digital cushion as it strikes hard rocks while the foot passes down through soft mud.

Compiled and written by the senior author (Forman).

The interdigital area is not involved. The open wound, left after the diphtheritic membrane sloughs, heals more slowly than does a similar eroded area between the digits.

Type 4.—This group consists of infected wire cuts, etc. The interdigital area is not involved. The rapidity with which the wound heals depends upon the location and extent of the slough.

Type 5.—This class occurs chiefly in cattle that have recently been shipped, and may constitute 50 to 80 per cent of the cases in an outbreak of foot rot in such cattle. It is caused by stepping on each others' feet in transit. The lesions develop in the soft tissue any place above the coronary band. The interdigital region is not involved. The extent of necrosis and slough is usually greater than with any other type of foot rot,—a 3 in. by 2 in. wound is not uncommon.

Type 6.—This type of foot infection is thought to be due to organisms other than *A. necrophorus*. It may arise as a sequel to true foot rot, to screw-worm infestation, to nail puncture, or other injury. It does not respond promptly to sodium sulfapyridine and sodium sulfathiazole injection. There is no visible diphtheritic membrane between the digits or elsewhere. The foot is hard and swollen, with or without detectable pus pockets, and is draining from one or more fistulous tracts. The animal is lame, is usually extremely dehydrated and emaciated, way down in milk production, and may or may not eat grain.

TREATMENT

Sodium Sulfapyridine.—Specific infection is a prerequisite for specific treatment. The necrotic conditions successfully treated with

sodium sulfapyridine and sodium sulfathiazole are thought to be pure, uncontaminated infections of *A. necrophorus* because of the typical, clearcut response of these lesions following injections. The pain and swelling first disappear. Then the necrotic diphtheritic membrane completely drops away, leaving a clean, circumscribed, open wound of variable size and depth which heals as an open wound. The time required for these various processes to take place varies with the individual case. Differentiation must be made between the time required for eradication of the primary *A. necrophorus* infection (characterized by disappearance of the initial swelling and pain, and sloughing of the diphtheritic membrane) and the time required for healing of the open wound left when the necrotic material falls away. If screw-worms are kept out of a wound of this kind, the cow will continue to walk, graze, and milk normally until final healing takes place. If the erosion is extensive, negligible swelling may remain after the lameness and major swelling disappear. Due to the irritant action of grass and weeds, the wounds above the coronary band heal more slowly than similar interdigital areas. Unquestionably, these open wounds would heal faster if kept dry and if topically medicated, but it was satisfactory to leave these animals in the herd and have the milker squirt bone oil* on the lesion once or twice daily. This eliminated han-

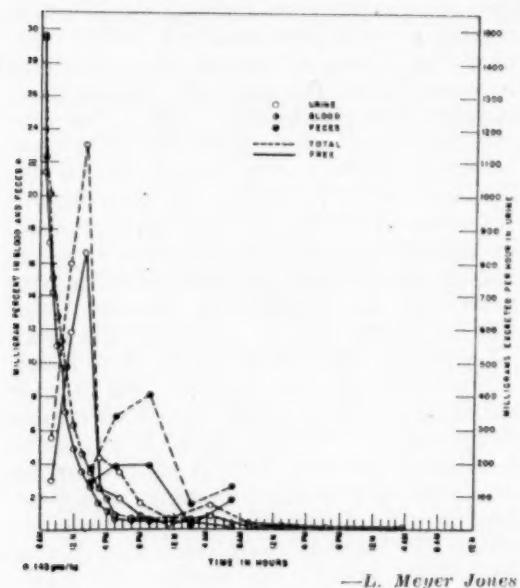
*Black tarry liquid derived from distillation of bones.

TABLE I—Results Secured by Treating Foot Rot

Method of treatment and dose	No. treated	No. retreated	% recovered (treatment)	% of reactions
Na. sulfapyridine 60 Gm. I.V.	890	33	96	3
Na sulfapyridine	54	8	100*	0
Na sulfathiazole aa. 30 Gm. I.V.				
Na sulfathiazole 90 Gm. I.V.	132	35	73	0.3
Na sulfapyridine	24	7	70	0
Na sulfathiazole aa. 25 Gm. I.V.				
Sulfapyridine, <i>per os</i> 180 Gm. (30 Gm. B.I.D.)	20	6	70	0
Na sulfathiazole 60 Gm. I.V.	261	91	65	0
Na sulfapyridine	7	7	0	0
Na sulfathiazole aa. 12.5 Gm. I.V.				

*Undue emphasis should not be placed on this series, as 66 consecutive cases (many of long duration) were successfully treated with a 60-Gm. injection of sodium sulfapyridine without needing retreatment. Likewise, 100 such consecutive injections of sodium sulfapyridine have been given without eliciting a reaction. Relatively, many of the most severe and most advanced cases were included in the first group, which nevertheless showed the most rapid rate of recovery.

dling the foot. The bone oil prevents screw-worm infestation and probably has some healing properties. The major drawback to bone oil is that it has a lingering, penetrating, offensive odor.



*Mg. per 100 cc. of whole blood; mg. per 100 Gm. of wet feces.

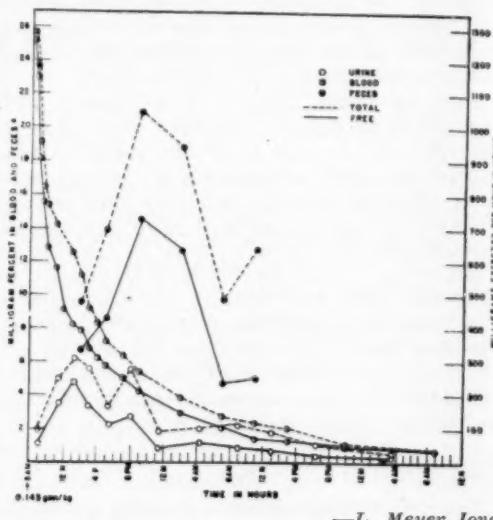
Fig. 1.—The blood, urine, and fecal concentrations of free and total sulfathiazole produced by an intravenous injection of 0.143 Gm./kg. of sulfathiazole sodium.

Screw-worms produce marked swelling and lameness by themselves. Likewise, either they or the person trying to remove them from a wound can reinfect the area. It is a natural tendency to want to remove the maggots manually. This is a mistake. Livestock owners should be cautioned against this procedure. Any attempt to dig out the maggots damages the tissues still more and tends to push infection into the deeper tissues. Regardless of the location of the infestation, never attempt to remove the maggots. After being killed, they should be allowed to slough out of the wound along with the necrotic tissue. This material comes away cleanly, and the remaining wound heals rapidly.

When treating relatively normal cows with foot rot, the rapidity of effective, safe treatment is important, because the number of cases that can be treated in a day largely determines the cost per treatment. The drug is weighed or measured in a previously calibrated container, dissolved in

distilled water, and filtered through one thickness of a creped, rapid flow filter paper. No attempt is made to sterilize the solution, which is then stored at room temperature away from light. Contrary to the manufacturers' instructions, these solutions need not be freshly prepared. If not exposed to direct sunlight, they can be kept and used effectively as long as is necessary under practical field conditions. We usually prepare a week's supply at one time. If there is sedimentation, the solution should be filtered again before use.

We have administered more than 1,000



*Mg. per 100 cc. of whole blood; mg. per 100 Gm. of wet feces.

Fig. 2.—The blood, urine, and fecal concentrations of free and total sulfapyridine produced by an intravenous injection of 0.143 Gm./kg. of sulfapyridine sodium.

intravenous injections of 60 Gm. of sodium sulfapyridine, more than 30 doses of 90 Gm. each, and one of 120 Gm. to all kinds of dairy cows in all stages of pregnancy.

Nervous Reaction.—Aside from the fact that milk secretion may be suppressed at the next milking after injection of sodium sulfapyridine, no harmful effects have been observed from these doses,—except for an occasional extremely alarming, but temporary, shock to the nervous system lasting from three to ten minutes and ending with spontaneous recovery. In the early cases, we used adrenalin, amphetamine, caffeine, and atropine as antidotes. We now use Dr. Dee's antidote: "Roll the animal up on her sternum and tell someone to hold and rub the head until she calms

down. As soon as the animal can be assisted to her feet, confidently assure the owner she will be all right, get in your car, and leave. Or treat other cases you have on the farm. The owner needs psychologic treatment, the cow will recover."

The following is a description of 1 of these cases by Dr. Burch: "Initial mild clonic spasms increase in severity rapidly. Erect ears, nystagmus, grinding of the teeth, snapping of the jaws, rapid jerking of the head, and tonic spasms of the legs are characteristic. There is temporary loss of vision, balance, and consciousness. The spasms subside gradually, the animal regains consciousness and balance in about five minutes, with or without treatment. The cow then cautiously regains her feet, moves slowly, and appears perfectly normal in ten or fifteen minutes."

If the convulsions last longer than ten to fifteen minutes, inject $\frac{1}{2}$ gr. of atropine sulfate. There are no other side reactions or after effects in these animals. Mouw and Teigland have seen 20 of these reactions, Dee 12, and Burch 5.

Sodium Sulfathiazole.—We have given more than 800 intravenous injections of 60 Gm. of sodium sulfathiazole, and more than 250 injections of 90 Gm. Only two serious toxic manifestations have been observed with this drug. Of 132 cases treated with 90 Gm. of sodium sulfathiazole intravenously, 35 required additional treatment. Of 261 cases treated with 60 Gm. of sodium sulfathiazole, 91 required additional treatment. All of these responded more slowly than had similar cases treated with 60 Gm. of sodium sulfapyridine.

Sodium Sulfathiazole and Sodium Sulfapyridine.—Each of 6, 3- and 4-year-old Jersey and Guernsey heifers in good condition was given an intravenous injection of 500 cc. of a solution containing 60 Gm. of sodium sulfapyridine and 60 Gm. of sodium sulfathiazole. Two of these developed sulfapyridine-like reactions. Twelve hours later, 1 of the 4 cases that did not have a reaction following the first injection was given a second injection of 60 Gm. each of sodium sulfapyridine and sodium sulfathiazole. She developed a sulfapyridine-like reaction and died in convulsions one and a half hours later. As this was the only fatality which occurred in over 2,000 cases treated, it was not expected. Only a colored boy was present when she died, and he

thought she had some respiratory difficulty in addition to the convulsions. While the number of cases treated was too few to be more than indicative, it would appear that toxicity to the central nervous system is definitely increased by simultaneous use of sodium sulfapyridine and sodium sulfathiazole.

If it is necessary to increase the dose of sodium sulfapyridine and sodium sulfathiazole for the larger breeds, effective safe dosage can probably be computed on the basis of 10 to 15 Gm. of drug / 100 lb. of body weight. This opinion is based on the large number of injections given to heifers weighing 600 lb. or less. The dose of sodium sulfathiazole probably can be safely increased above 15 Gm./100 lb. We hesitate to increase the dose of sodium sulfapyridine. A fair number of trials indicate that these doses of sodium sulfapyridine and sodium sulfathiazole can be repeated on successive days with safety. This observation is confirmed by noting the rapid disappearance of these drugs from the blood stream as demonstrated by Jones² (fig. 12 and 13). They are reproduced herewith as figures 1 and 2.

Intravenous injection of sodium sulfapyridine is the treatment of choice when dealing with foot rot caused by *A. necrophorus* infection.

Goats.—Six milk goats with foot rot were treated on a farm where foot rot in cattle had been successfully treated with sodium sulfapyridine. The estimated weights of the goats were 90 to 100 lb. Two very early cases, just showing cracks between the digits, were cured by one intravenous injection of 12 Gm. of sodium sulfapyridine. Three chronic cases, with badly infected joints and tendon sheaths, showed improvement in appetite and milk flow, but no foot improvement following similar treatment. Five days later, these 3 were each given a 13-Gm. injection of the same drug. One developed temporary nervous reactions and convulsions. Seven days later, these 3 goats were given a third injection (13 Gm.). The same goat developed the same type of temporary reaction. The sixth goat, heavily pregnant, died in convulsions one hour after receiving an intravenous injection of 18 Gm. of sodium sulfapyridine. With one exception, this goat was given a larger dose in proportion to body weight than any of the cows. This result bears out our pre-

vious conclusion that 90 Gm. (15 Gm./100 lb.) approaches the maximum safe dose of sodium sulfapyridine.^{3, 4}

Sheep.—Foot rot in sheep is not caused by *A. necrophorus*, but by complementary action of *Actinomyces nodusus* and *Penortha* sp. Therefore, treatment of this condition with sulfonamide injection may not be satisfactory. However, *A. necrophorus* is involved in many pathologic processes in sheep.

DISCUSSION

It was previously hypothesized that when *A. necrophorus* invades animal tissue it produces a barrier that tends to prevent the growth of other bacteria in the affected tissue.³ Extending this line of reasoning another step, it would be expected that when this organism invades tissue as a secondary agent it would crowd out the primary infective agent and assume the dominant clinical rôle. The fact that *A. necrophorus* actually does crowd out the primary invader and assumes the dominant clinical rôle was well brought out by Biester and Murray when writing about swine enteritis. As quoted by Udall,⁵ they say: "The *Bacillus suis*-*enteritis* produces the initial injury and appears in greatest numbers near the surface and outer portions of the caseated membrane. These decrease in number towards the inner portions while *necrophorus* organisms appear in greater numbers, so that upon reaching the base of the lesion only *necrophorus*-like organisms are found upon direct histologic examination. . . . In cases where the caseated zone is deep and present for a long period, the *necrophorus* bacilli are very numerous. In chronic cases the destruction of tissues by the *necrophorus* organism overshadows everything else."

The question has been correctly raised, "If 60 Gm. is a satisfactory dose for a 900-lb. cow, why wouldn't 40 Gm. work equally well for a 600-lb. cow?" We know of no reason why this shouldn't be true, but clinically it doesn't work that way. Apparently, 60 Gm. of sodium sulfapyridine has been equally effective in cows weighing 800 to 900 lb. and in those weighing only 600 lb. However, 40- or 50-Gm. doses do not work as well as 60-Gm. doses in 600-lb. cows. It isn't logical, but it's true. And actually the margin of safety is so wide, and the value of practitioner's time is so much greater than the cost of the additional drug used, that the question has no practical significance.

Sodium sulfonamides should not be mixed with other drugs, nor should they be injected with apparatus that has been contaminated by other drugs. However, they may be administered concurrently with any other drug (N.N.R.). Any concentration of these drugs may be used intravenously. A 5 per cent solution was first used, then 12 per cent (60 Gm. in 500 cc.), and this was used in practically all cases reported as receiving 60-Gm. doses. Most of the 90-Gm. doses were given in 18 per cent solution (90 Gm. in 500 cc.). Ten 90-Gm., rapid intravenous injections of sodium sulfathiazole have been given in 36 per cent solution (90 Gm. in 250 cc.), but this approaches the saturation point and it takes time to get the drug into solution. If prepared a day or two before filtering, no time need be lost in its preparation.

"The exact mode of action of the sulfonamide compounds on susceptible bacteria is still uncertain. Experimental evidence indicates that these compounds may interfere with the proper functioning of certain enzyme systems essential to the multiplication or survival of bacteria. Thus, if a sulfonamide drug is present in the tissues in relatively low concentration (as is generally true when these drugs are administered by the oral route), the rate of multiplication of susceptible bacteria is decreased (bacteriostatic effect), while if the drug is present in high concentration (as occurs when local application of sulfonamide drugs is employed) an actual killing (bactericidal) effect may be noted on susceptible microorganisms."⁶

In the past, sulfonamide therapy has been more or less aimed at holding the invading organisms in check until the natural body defense mechanism overcame the infection. This was the best that could be done with the low concentration of drugs produced in the tissues by oral therapy. But, if we can safely raise the drug concentration in the tissues to the point where it becomes a killing agent instead of a bacteriostatic agent, and then safely maintain a killing concentration long enough to destroy all of the pathogenic bacteria present, a whole new concept of sulfonamide therapy presents itself. Until proved otherwise, we may assume that we have actually accomplished this with the drug-susceptible *A. necrophorus*. I am of the opinion that much higher blood levels may be safely attained and maintained with sodium sulfonamides than with the parent drugs. Possibly their higher alkalinity helps retard their

toxicity. In some conditions, the increased alkaline reserve produced may in itself have a therapeutic effect. Two factors largely determine the results obtained with any germicide: the relative susceptibility of the given organism to the strength of germicide used, and the length of time of contact between the organism and the germicide. It is possible that *A. necrophorus* is killed by a drug concentration that is merely bacteriostatic for other pathogens. However, we hope to find that tissue drug concentrations safely attained by intravenous sulfonamide injection are germicidal to other pathogenic bacteria, and that these bacteria can be quickly and completely overcome if the drug concentration is maintained longer by means of repeated injections administered at suitable intervals.

In attempting to determine the feasibility of this type of treatment, 4 heifers and a bull were each given eight intravenous injections of 90 Gm. of sodium sulfathiazole at approximately twelve-hour intervals. All 4 heifers were suffering from type 6 foot rot of long standing, and were in poor condition. The bull was in medium condition. One heifer was well advanced in pregnancy and has since calved normally. The heifers showed varying degrees of loss of appetite for grain, but the bull continued to eat all the grain he could get. Following the fourth and subsequent injections, 1 of the heifers grunted as if in pain for several minutes. This reaction was not deemed sufficient to halt the experiment. When the animals were brought to the barn for a contemplated ninth injection, this animal was observed to pass bloody urine, although it had appeared normal at the time the eighth injection was administered. Urine from the bull and the other heifers appeared normal. The injections were discontinued. At the next milking this heifer's urine looked normal and has so remained. No antidotal treatment was used. One other heifer grunted following the later injections. Two heifers became cyanotic. No other toxic manifestations were observed in any of the animals during treatment, and no deleterious after effects have been noticed.

As a result of these trials, we believe that research men can confidently determine the answers to many questions without worrying greatly about the risk of loss of expensive experimental animals which their budgets might not permit them to replace. We need most to know the proper intervals for reinjection of each drug in order to maintain a continuous germicidal blood drug level in each species of animal. The

chief advantage of this type of therapy is that it should be concluded after one or a few injections. This in itself is a safety factor. Much larger oral doses of sulfonamides can be safely given for a short time rather than when the treatment must be continued. All of our severe toxic reactions with oral sulfonamides have occurred on or after the fourth day.

Another potential advantage of sodium sulfonamide therapy is that we may find organisms not previously susceptible to such treatment becoming so when the drug concentration is increased. Normal animals may tolerate higher doses than sick ones. If so, reduced doses must be compared with treatments formerly administered. Sodium sulfathiazole would be safer to use in treating sick cows (pneumonia, etc.), as a sulfapyridine-induced convolution in a sick cow hypersensitive to this drug would be serious.

Research workers should not condemn this form of therapy until adequate proof has been acquired that a permanent pathologic condition is produced. Possible temporary changes, which may occur in the blood and urine during the brief period of treatment but which correct themselves after cessation of treatment, should not be considered prohibitory.

If we can find combinations of the sodium sulfonamides that have a synergistic germicidal action, without having a like amount of synergistic toxicity, the potentialities of such therapy would seem to be excellent. The field of sodium sulfonamide pharmacology and therapeutics in large animal medicine needs to be reviewed.

SUMMARY AND CONCLUSIONS

Intravenous injection of sodium sulfapyridine is unquestionably the method of choice in treating *Actinomyces necrophorus* infection in cows. No surgery, no local medication, no bandage, and no hospitalization are necessary. The treatment is clean, easy, highly specific, and professional. It saves time and temper. Rapid recovery puts the cow on her feet and returns her to full milk flow almost immediately.

In comparing the reports of results achieved with sodium sulfapyridine and the other drugs used, bear in mind that by the time we used oral sulfapyridine, or intravenous sodium sulfathiazole and the combined sodium sulfonamides, the dairy-

men were in the habit of calling for treatment as soon as a cow became lame. Therefore, the percentage of advanced cases treated with these drugs was much lower than with sodium sulfapyridine, and yet the recoveries were less rapid.

Screw-worm infestation definitely prolongs the rate of recovery and frequently necessitates retreatment. This was observed by each one of the authors.

The simultaneous intravenous injection of 50 Gm. of sodium iodide with the sodium sulfapyridine was considered beneficial in 6 chronic cases. Recovery appeared to be more rapid than with the latter drug alone.

The rate of recovery was slower with sodium sulfathiazole and with mixed sulfonamides than with sodium sulfapyridine but comparable with that secured when sulfapyridine was fed. There may be a synergistic action when combinations are used, and it remains to be determined whether toxicity is increased or diminished thereby.

Doses of 60 to 90 Gm. of sodium sulfapyridine or sodium sulfathiazole can be repeated on successive days.

Milk secretion may be suppressed at the milking which follows injection of sodium sulfapyridine. About 3 per cent of cows so treated developed a temporary reaction from which they recovered spontaneously.

No abortions were produced.

Amputation was not necessary.

Iodine and mercury blisters corrected some cases of lameness when exostosis had developed following chronic infection.

Six goats were treated for foot rot infections with disappointing results. Organisms other than *A. necrophorus* may have been responsible, as Australian workers found they are in foot rot of sheep.

Sodium sulfonamide solutions need not be freshly prepared. If protected from sunlight, they can be stored without refrigeration for a week or two, which is as long as is necessary under practical field conditions. Solutions need not be sterilized.

Any concentration of drug can be used and may be injected as rapidly as it will flow through a 14-gauge needle from a standard gravity injection outfit.

If a light, flaky precipitate forms, it usually dissolves with shaking. If it fails to do so, again filter the solution. A yellowish discoloration does not interfere with the effectiveness or safety of the solutions.

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Streptomycin in Intestinal Infections

Streptomycin, compared with sulfonamides, is less toxic and more effective in smaller doses for the treatment of intestinal tract infections, and it may be indicated where penicillin and sulfonamides fail. It is absorbed sparingly from the intestinal tract and is excreted with the feces, inhibiting the growth of susceptible bacteria as it travels to the rectum. Oral administration of this drug alters the coliform flora of the alimentary tract within twenty-four to forty-eight hours.—*Current M. Dig.*, June, 1947.

The Future of Bacitracin

Bacitracin lingers in the blood stream while penicillin leaves in a hurry, and therein may lie a coming favoritism for the former. Prolonged blood levels and low renal clearance are significant virtues of this new antibiotic agent that point to smaller doses per injection, or a smaller number of injections, as compared with penicillin. A drawback to the use of bacitracin is its toxicity as prepared commercially. From the experiences of Dr. Balbina Johnson and his coworkers (*BuMed News Letter*, Navy Dept., March 14, 1947), who made preparations of greater titer in their own laboratory that did not produce noticeable toxic symptoms, it appears that it should be possible to rule out the toxic elements through improved production techniques.

Most of the so-called miracle drugs are capable of causing cutaneous reactions.—*Case Report, J. Am.M.A.*, June 28, 1947.

Tetanus in a Mare

On June 2, 1947, a typical case of tetanus was found in a mare on a farm near Monroe, La. Tetanus antitoxin (10,000 units) was injected in several places on the mare's neck. On the following morning, she was on her feet and walking about. Another 10,000 units of antitoxin were given, and the owner was instructed to feed and water the animal as usual. Again on June 4, 10,000 units of tetanus antitoxin were administered. The mare has recovered completely and has been ridden since June 7.—*H. H. Baur, D.V.M., Monroe, La.*

Penicillin-Caronamide Therapy

When penicillin is injected, and supported by oral caronamide, blood levels are higher and retention longer than if given alone. Neither bacteriostatic nor synergistic action is attributed to caronamide; the action lies in its influence on the duration and magnitude of the plasma and tissue concentrations, presumably by blocking the enzyme system responsible for penicillin transport to the cells of the renal tubules. Caronamide is absorbed rapidly from the gastrointestinal tract, hence its use with penicillin for oral administration.—*Bull. U. S. Army M. Dept., July, 1947.*

Nematode Infections on Rested Pastures

That resting of "sheep-sick" pastures for long periods may not be a certain means of eliminating infective larvae was shown by Leiper in England (*Vet. Rec.*, May 24, 1947). Sheep and goats placed on pastures that had been sheep-rested for several years became naturally infected with *Trichostrongylus retortaeformis*, a common parasite of wild rabbits, and they also became infected with species of *Nematodirus*, *Chabertia*, *Oesophagostomum*, *Capillaria*, and *Trichuris*. *Trichostrongylus retortaeformis* was acquired from the feces of wild rabbits, while infection with the other parasites was traced to mechanical transmission of eggs and larvae, apparently by rabbits.

The rôle of wild rabbits in the contamination of these pastures was evident from the fact that sheep and goats turned onto rested pastures which had been rab-

bit-proofed were almost completely worm-free when slaughtered and examined four months later.

AN-148, a New Analgesic

Clinical studies of AN-148* on 106 patients showed that this new analgesic can be administered orally, subcutaneously, intramuscularly, and intravenously with no local reaction. It was tolerated well by a patient alleged to be sensitive to opium alkaloids. Two patients given large quantities showed no tendency to addiction. While producing dizziness in some ambulatory patients, it did not appear to interfere with the mental equilibrium nor cause central respiratory depression.

Promising results were obtained when used instead of morphine for the relief of severe pain before and after surgery. For immediate effect, the intravenous route was most suitable.

In the words of the investigators, Drs. A. A. Gentling and J. S. Lundy, of the Mayo Foundation, "It is expected that AN-148 will prove to be a valuable analgesic agent, especially as a substitute for morphine."—*Proc. Staff Meeting, Mayo Clin., June 25, 1947.*

*1-dimethylamino-3, 3-diphenyl-2-methyl-4-hexanone.

Radioactive Penicillin.—Radiopenicillin, produced by putting radioactive sulfur into the material on which the penicillin-producing mold is grown, is one of the newer products of atomic research. It is injected into the body as a tracer, so that blood concentration, excretion, and other facts about this antibiotic agent can be studied in detail.

Nerve Damage from Streptomycin.—A renewed warning, based on mounting clinical evidence, has been issued by the Army Medical Department that streptomycin can cause prolonged or permanent damage to the auditory and labyrinthine branches of the acoustic nerve.

Workers at the Montana experiment station found that a ration composed of dried beet pulp with molasses, barley, and alfalfa hay reduced the incidence of bloat in steers, but was not completely preventive.—*Biol. Abstr., Apr., 1947.*

NUTRITION

Vitamin A Deficiency of Cattle in Colombia, South America

JOSE GONZALEZ ALVAREZ, D.V.M.

Cartagena, Colombia

KERATITIS is of common incidence in cattle during the dry* season in some hot lands of Colombia (South America). Sometimes it is quite difficult to treat, because it is often complicated with keratohelcosis and the concomitance with other disturbances in the body of the animals, as abortion, slow development of the teeth, and retention of placenta, is not uncommon.

The author was working in 1944 as assistant veterinary pathologist at Granja Ganadera del Nus (cattle experiment station), Department[†] of Antioquia, and observed that the condition was very common in the early months of that year. The affection was characterized in dairy cows, especially, by the following symptoms: lacrimation and constant rubbing of the affected eye or eyes; some pain and loss of vision; and from time to time, several small ulcers detected, by means of the ophthalmoscope, on the inner surface of the cornea. In 18 cows, the affected eyes had a cloudy blue-green appearance; in others it was sea green and blue-white. Because of the opacity of the cornea, a deep examination for damage to the optic nerve papilla was impossible, but naked-eye symptoms showed it to be glaucoma.

At the same time, there was photophobia. The conjunctivae were red, moist, and glistening. The lacrimal secretion was increased from the first and later became mixed with mucus and sometimes with pus, which collected in the medial canthus and glued the eyelids together, especially at night.

Formerly hygienist veterinarian, Ministry of Work, Hygiene, and Public Health, Cali, Valle del Cauca, Colombia. Dr. Alvarez was awarded a fellowship in animal pathology at the Utah State Agricultural College and completed the course in June, 1947.

*Colombia has only two seasons: dry and rainy.

[†]Major political divisions in Colombia are called "departments." They correspond to states in the U. S. A.

When the condition was complicated with ulceration of the cornea in one or more places, the ulceration healed completely but sometimes progressed rapidly and extended to Descemet's membrane or even destroyed the whole cornea. The borders of the ulcer and also the whole cornea were quite clear, or pus collected only at the base of the ulcer. In 4 of the 18 cases observed by the writer in dairy cows, the posterior membrane of the cornea was pressed outward by the internal ocular pressure, causing staphyloma. Rupture of the cornea led to prolapse of the iris with serious consequences. Such radical therapy as enucleation of the eyeball was carried out in these cases. In most cases, parenchymatous keratitis developed with uniform cloudiness of the cornea (38 cases), and in some rare cases, marked ciliary infection occurred (3 cases).

Sometimes simultaneously, other disturbances were present in the animals; *i. e.*, in a heifer the eye condition was complicated with sinusitis of the right maxillary sinus, and gastrointestinal troubles; at other times the keratitis was associated with skin disturbances, such as photosensitization and skin warts (8 cases).

In pregnant cows, sometimes gestation was prolonged and many times terminated in difficult parturition (10 cases), and even if parturition were apparently normal, injuries of the placenta or retention of it occurred; sometimes my colleagues at Granja del Nus were inclined to suspect brucellosis, but all cases gave a negative reaction to the brucellosis agglutination test (19 cases).

Usually, the calves were born with teeth; but the author observed at Granja del Nus, Antioquia, Colombia, in dry season while the pasture was dry, that 14 cows gave birth to calves without teeth. Is not this lack of vitamin A in the cattle during the

gestation period responsible for the slow developing of the odontoblasts and pulp? Three of these calves were born weak, and all the cows had retained placentas.

It is very interesting that this condition has been more prevalent in females, especially pregnant cows and cows with calves. The condition is rare in males and in growing calves. This point of view supports the hypothesis that the calves need the vitamin A obtained from their mothers, but cows during the dry season cannot supply this vitamin because the pastures are dry, so the cows lose what they cannot restore in dry season.

The cattle maintained under these conditions do not receive a balanced diet; thus a chronic vitamin A deficiency could easily be a factor in eye pathology. With this thought in mind, some of the animals affected with these conditions were isolated and put under vitamin A injections, while others were transferred to a place where the grass was green, and a third group was treated with disinfectants only. The animals whose vision was restored more quickly were those that were artificially treated with vitamin A injections, followed in order by the cows that were pasturing in the green grass; the group under disinfecting drugs did not show noticeable improvement and were treated with vitamins also. After five days of daily injections in the first group, the corneal condition was noticeably improved in 24 of 26 cows on observation, and improvement was shown twelve days after the beginning of the observation in the group on green pasture. The complete recovery from this condition occurred in fourteen days in injected cows and in thirty-two days in pasturing cows.

After the cornea had cleared, examination with the ophthalmoscope revealed no glaucoma in any case; notwithstanding, this cloudiness may have been a primary factor in the condition.

Vitamin A treatment would obviously be of great value in repairing injured corneal tissue in such eye conditions; and remarkable results were apparently obtained in the recovery of the above mentioned cases.

Some research workers are satisfied with the statement that this kind of keratitis and some of the described symptoms are caused by a lack of vitamin A in the body.

The point of view is supported by the fact that the vitamin A level in the body is low during the dry season when the pastures do not have elements to nourish the body tissues, because they are dried by the intense heat and lack of rain. The condition usually ends as soon as the rainy season begins and the grass is green.

Fluorine Regulation.—Based upon observations on the harmful effect of feeding rock phosphate supplements to livestock, action was taken by the Minister of Food (England) to regulate the percentage of fluorine market foods may contain. Fluorosis is manifested by bone lesions, mottled enamel, and pathological changes in the alimentary mucous membrane.

In nutritional deficiencies, or malnutrition, not expressed by specific clinical evidence, of which rickets, goiter, scurvy, night blindness, and lamziekte are examples, the missing agency is difficult to detect. Result: Vitaminotherapy has the distinction of being popular despite an unawareness of what's wrong.

Lipoxidase is responsible in part for the deterioration of alfalfa as it cures in the field, but this enzyme does not appear to be responsible for carotene destruction during storage.—*Nutr. Rev., July, 1947.*

Cadmium, a white metallic element used in the manufacture of certain alloys, accelerates dental caries in experimental animals.—*Nutr. Rev., July, 1947.*

Whole starfish, dried and ground into meal, make acceptable chicken feed. Analyses show 39 per cent protein and 19 per cent calcium. Up to 5 per cent of the mash mixture may be starfish meal.

Vitamin D is added to milk by one of three methods: exposing the milk to ultraviolet light, adding vitamin D concentrate to the milk, or feeding irradiated yeast to the cows.

The niacin requirement for growing pigs varies inversely with the protein consumption.—*E. W. Burroughs, Reynoldsburg, Ohio.*

Niacin deficiency in dogs is manifested by loss of weight, anorexia, gingivitis, and bloody diarrhea.

The Question of Supplementary Vitamins for Calves

PAUL H. PHILLIPS, Ph.D.

Madison, Wisconsin

THE QUESTION of supplementary feeding of vitamins to calves has been a live issue since the 1941¹ report of the writer and colleagues. The basis of that report was sound chemical evidence obtained from field cases from troublesome herds. Each calf served as its own control since it was possible to check by blood analysis both before and after treatment. The original report described the conditions we found in the field. All cases studied were in farm herds where reproduction and calf raising were causing trouble, hence they can be considered as the problem herds found not infrequently in dairy regions. Prior to the time our treatment was instituted, 50 to 75 per cent of the calf crop was lost through loss of appetite, emaciation, watery eyes, diarrhea, and pneumonia. Vitamin A analyses of the blood of these calves indicated deficiency levels of this vitamin. The administration of 65,000 I.U. (international units) of vitamin A (shark liver oil) per week brought about a prompt response in these sick calves. The inclusion of certain vitamin B complex members appeared to further improve this response. From these original observations we pointed out that field cases of calves sick with diarrhea were largely a nutritional problem and that the administration of vitamin A and certain members of the vitamin B complex eliminated the mortality.

We have repeatedly emphasized the fact that the newborn calf was deficient in vitamin A. It was emphatically pointed out that "these observations again emphasize that the liberal use of colostrum in feeding calves is good management since it supplies the early requirements for vitamin A in the calf." (Phillips, *et al.*¹) The ingestion of colostrum rich in vitamin A quickly brought about normal blood-plasma levels. Furthermore, it was pointed out that the blood-plasma concentration of vitamin A was influenced by the ration of the dam. Winter rations tended to reduce it while "rations with ample carotene or fortified

with vitamin A tend to raise it." In 1946 Spielman *et al.*² as well as Wise *et al.*³ confirmed these results. Spielman *et al.* used well-nourished, pasture-fed cows to test the placental transmission of vitamin A and carotene. Carotene and vitamin A therapy for sixty days prior to calving significantly increased the blood-plasma and liver concentration of vitamin A in the offspring. They concluded that the "prepartum diet of the normal bovine may influence markedly the vitamin A and carotene reserves of the newborn calf." The fact that 60 million I.U. of vitamin A were administered to the cows to effect a store of less than 1/10 of a million I.U. of vitamin A in the newborn calf liver was not mentioned. This is an indirect method of fortifying the newborn calf. It is very inefficient and needlessly expensive. This method may produce a beneficial effect upon the dam under certain circumstances, but this remains to be demonstrated.

In 1943, Lundquist and Phillips⁴ presented evidence which indicated that vitamins A, C, and nicotinic acid were essential in the diet of the newborn calf and were exceedingly important in the prevention and control of early calfhood diseases. Subsequently, Hansen, Phillips, and Rupel⁵ in 1946 found that the favorable nicotinic acid effect was negligible in the presence of adequate vitamin A. Recently, it was reported by Johnson, Wiese, Mitchell, and Nevins⁶ that "nicotinic acid was not found to be essential for growth of the bovine species." They used colostrum fed young calves. Johnson *et al.* believe on the basis of their data that nicotinic acid synthesis occurred in the body tissues.

Our data on ascorbic acid indicated that it was an essential metabolite which aided in the control of infectious diseases. The prognosis of peritonitis, navel infection, and pneumonia was much more favorable when the ascorbic acid concentration of the blood plasma was maintained at adequate levels by ascorbic acid administration. No stimulatory effect upon growth was claimed. The relationship of ascorbic acid to infections and detoxification has been shown in many

From the Department of Biochemistry, College of Agriculture, University of Wisconsin, Madison.

instances (Rosenberg⁷); hence it is not unexpected that young calves should show a similar physiologic response.

Occasionally, we have resorted to the use of sulfonamides when it was plainly evident that a violent infection was active. In such cases 2 to 4 Gm. daily of sulfathiazole was used. This drug has been superior to several which we have investigated in connection with the nutrition of young calves.

We have stated before, and I repeat again, that the full use of colostrum is the essence of good practical management. How does the ration of the cow affect the colostrum vitamin A content? Cornell claims that cows fed for sixty days prepartum on good quality roughage produced colostrum which had twice the vitamin A content of those fed a poor ration. Actually, vitamin A supplementation with very large amounts resulted in only a three- to sixfold increase in the vitamin A content of the colostrum. We have shown¹² that colostrum from cows fed and managed alike from 6 weeks of age to maturity may have a seven-fold variation in vitamin A content. Further, the vitamin A content of colostrum varies with lactation: it is double in the first lactation in comparison to the second. The length of dry period also affects the colostrum vitamin A values.

The Cornell workers have stressed the importance of the ration of the dam. According to their statement,⁸ the vitamin A deficient dams produced calves that "had less than 1/10 of a day's supply of vitamin A," but calves from cows fed high quality hay and corn silage or pasture "had seven times more vitamin A reserves at birth." By simple arithmetic from these figures calves from well-fed dams have seven-tenths (0.7) of a day's supply of vitamin A in reserve, which adds up to saying that newborn calves from normal cows are deficient in vitamin A at birth. When these workers fed the dams 60,000,000 units of vitamin A over a sixty-day prepartum period, a ten-day reserve was estimated to be present in the new-born calf. If the blood-plasma, vitamin A data on the newborn calves are critically examined it is evident that only when the high levels of vitamin A were fed was a difference noted in the blood-plasma vitamin A, and even this was insufficient to bring the blood values up to the normal range. The liver-storage data

were not consistent. The total stored vitamin A equivalent was extremely low except from the vitamin A fed dams where the mean value was reported to be just under 100,000 I.U., enough for a four to ten-day supply according to our data, and this estimate is based on the assumption that liver stores would be 100 per cent available, an assumption which is dubious.

Certain conclusions can be made. It is apparent that a normal ration for the dam will not greatly fortify the newborn calf with vitamin A. Secondly, colostrums vary greatly in vitamin A content, and the latter is conditioned by such factors as the number of lactations, feeds, length of dry period, and the age. Add to these the hazards of season and weather and the stage is all set for occasional trouble even in the best of herds. This is especially true on those farms where climatic conditions are notoriously unfavorable, or on those farms where the management is not up to standard. The practical dairyman is not like an endowed institution. He does not buy feed supplies on the open market. He has to feed his own home-grown roughage, and he feeds what he has, good, bad, or indifferent. If it is good, results are good; if it is bad, he has trouble. Therefore, he must depend upon an outside source for the factors that his ration lacks. From here on out it is a question of economics. If "vitamin pills" are the best buy then they are to be recommended, if "canned colostrum" is cheaper, it should be recommended by all means. Colostrum should always be used. All the care, sanitation, and management in the world won't correct a dietary deficiency. When the diet's right you can win the fight.

Hundreds of calves in normal, well-fed, well-managed herds have been fed vitamin capsules containing vitamin A, ascorbic acid, niacin, and vitamin D without beneficial effects upon growth, scours, or other calfhood diseases by numerous investigators (Krauss *et al.*,¹⁰ Norton *et al.*,⁹ Spielman *et al.*,^{2, 8} Nevins *et al.*,¹¹ Johnson *et al.*⁶). Their calves invariably received colostrum for variable periods. *In no instance have these investigations selected out the calf, or calves in difficulty, or problem herds as shown by blood vitamin A, or ascorbic acid analysis, and given the appropriate and indicated therapy as shown by the analytical results.* Until it is demonstrated

that these vitamin supplements are useless in such herds and cases, the recommendations as presently conceived and formulated seem to be sound, *i.e.* (1) the administration of 50,000 I.U. of vitamin A daily up to 10 days of age, or the administration of high vitamin A potency colostrum equivalent to 50,000 I.U. vitamin A daily; (2) the administration of ascorbic acid in cases of infection with febrile reactions; (3) in selected cases the use of sulfathiazole at 2 to 4 Gm. per calf per day; (4) be alerted to a seasonal problem since the incidence of the problem calf cases are higher in the winter months, or during the barn feeding period, and (5) include vitamin D (200 to 500 units) as a precautionary measure.

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Placental Transfer of Vitamin A.—Cornell University studies of goats and swine showed that the feeding of massive doses of vitamin A during the last quarter of gestation markedly increased the amount of vitamin A in the plasma and liver of the young. Vitamin A content of the colostrum also was increased greatly.—*J. Anim. Sci.*, May, 1947.

State Meat Inspection in Kansas

Next to California, Kansas appears to be making the most headway in providing all the people with a meat-inspection service independent of the federal service in the large packing plants. The report of the State Board of Health in this connection for 1946 gives a comprehensive account of its scope and cost:

Number meat plants on state inspection	61
Number meat plants not on state inspection	225
Total number meat plants	286
Number poultry dressing plants	176
Total number plants under permit	462
Number of veterinarians employed	42
Total number animals slaughtered under state inspection	208,061
Total dressed weight of meat produced under state inspection	48,211,549 lb.
Cost of inspection	\$38,159.84
Cost of inspection per animal18
Cost of inspection per pound of dressed meat0008
Number of animals slaughtered in non-inspection plants	377,000
Weight of dressed meat produced in non-inspected plants	90,000,000 lb.
Total number animals killed under program	575,061
Total weight of inspected and non-inspected	138,211,549 lb.
Fees for permits	\$ 3,930.50
Fees for inspection services	\$38,159.84
Expenditures for veterinary services including state level salaries and expenses	\$47,802.71
Total cost of Board of Health	\$ 5,712.37

From Bulletin of the Kansas Veterinary Association, March, 1947.

Biotin deficiency lowers the resistance of chickens and ducks to avian malaria parasites.

Riboflavin, Niacin Cost Less.—The price of riboflavin was reduced \$50 per kilogram (from \$200 down to \$150) effective June 9, 1947, and that of niacin was cut \$1 per kilogram, from \$7 to \$6.—*Feedstuff*.

Trace-mineralized salt, if properly prepared, takes care of all the known minor-mineral requirements of farm animals.—*G. Bohstedt in Hoard's Dairyman*.

Sugar has a neutralizing effect on the action of caffeine.

EDITORIAL

The Physiology of Heat Regulation—Its Syndrome and the Fever Medicine of the Old Veterinarians

The health range of body temperature is severely limited, more so than is now generally supposed. The oldest as well as the most modern diagnostic method is deeply implicated in the narrow range of body heat because heat is the outward expression of life, and its autonomic or therapeutically induced regulation constitutes health and survival. The old physician's determination to "cure the fever" had a sound basis which modern medicine has strived in vain to discard.

In the human being, for example, the health range is barely more than 1 F. in either direction. A swing of 2 F. from the mean of 98.6 immediately sets the thermoregulatory mechanism in motion. The resulting reaction is all that the best clinical and laboratory diagnostician is able to detect. In terms of local or general heat (fever), fever-is-what-fever-does. Hyper- and hypopyrexia merely signify a long swing from the mean temperature of the body. The manifestation in visible or detectable reactions is the symptomatology of the malady expressed as fever, chills, shooting pains, headaches (in man), accelerated breathing (rapid respiration, panting, gasping), organic derangement (thirst, anorexia, diarrhea, constipation, emesis, uremia, abortion), nervous upsets (agitation, staggers, cramps, convulsions, delirium, collapse, coma, drowsiness), myasthenia, weakness, relaxation, vasodilation, cardiovascular embarrassment, peripheral anemia, hematopoietic depression, leukopenia, leucosis, acid-base, and electrolyte (water) imbalance, which are so many of the formidable signs caused by, or associated with, a mere swing of the body temperature beyond its normal range.

A fascinating work on the subject is titled "Animal Behaviour and Heat Regulation in Hot Atmospheres," by K. W. Robinson and D. H. K. Lee, University of Queens-

land, Brisbane, Australia, in which is shown, experimentally, the effect of hot atmospheres on lower and higher mammals independent of the presence of disease. The observation indicates that the outward symptoms and detectable lesions are comparable to the reactions of the fever which the old physicians strove so hard to subdue. Although these authors do not express their conclusions in these broad terms, they do suggest a relationship "between resistance to physical stress [heat] and immunity to infective and biochemical agencies."

In conclusion, whether the attack on fever is frontal (the old way) or flanked (the new way), the fact remains that in the practice of veterinary medicine, the clinical thermometer is still a mighty instrument. It depicts reactions to processes which defy analysis—up to now.

Funds for Research in Horse Pathology

The Scientific Advisory Board of the Grayson Foundation through its spokesman, Dr. Fred W. Rankin, told the Thoroughbred Club of America recently that the Foundation has completed plans to finance a notable research program on certain "veterinary mysteries," among them (1) virus abortion of mares, (2) periodic ophthalmia, (3) influenza and complications, and (4) nutritional conditions affecting the skeletal organs.

Also under consideration is an inquiry to determine if there is an Rh factor in horses as a possible cause of fetal and post-natal deaths in foals. The funds already available for these researches total \$450,000, with prospects of raising \$150,000 more by the end of the year. In the same report (*The Blood Horse*, July 19), Major Louis A. Beard, secretary-treasurer of the Foundation, announced that the member-

ship fee ranges from \$100 to \$25,000 a year for three years. The funds and the projects will be distributed among selected institutions. For example, the virus abortion study will doubtless go to the Department of Animal Pathology, University of Kentucky, a leader in that field.

A deterrent to sustained investigational work on diseases of horses is its cost. Great programs have been few and results sketchy on that account. With the exception of such work as that of Ramon of France and of Kelser of the U.S.A., who had the horses of armies for their "guinea pigs," the fruits of scientific equine research have been disappointing to the clinic through all the years of modern medical investigation. Diseases like influenza, pneumonia, purpura hemorrhagica, founder, azoturia, hind leg lymphangitis, arthritis, heaves, stringhalt, cribbing, and others, have long remained chapters as dark as in the nineteenth century. With exceptions that need not be mentioned here, so far as horses are concerned, the books of Percival and Youatt are just as informative as modern texts. An ample fund for carrying out research on horse pathology is, therefore, as unusual as it is complimentary to the donors.

Veterinary Public Relations in England and America

The following classified advertisement appeared under the "appointments vacant" section of *The Veterinary Record* (June 28, 1947):

PUBLIC RELATIONS OFFICER. — Applications are invited from members of the Royal College of Veterinary Surgeons and others for the post of Public Relations Officer to the National Veterinary Medical Association. Journalistic experience and press contact desirable. Special consideration will be given to applications from persons with a knowledge of the interests of the veterinary profession.

Commenting editorially on this advertisement, the *Record* points to the need for a public relations section in every national organization or group, veterinary associations not excepted. In the past, the only medium used by the British veterinary profession for informing the public of its activities was the client-professional relationship, but now "a more positive approach . . . should be made to give a continuous

presentation of the activities of the veterinary profession to the general public. . . ."

The *Record* goes on to say, "If we do not adopt such a positive policy of public relations, our activities, even in the narrower and more obvious sphere of therapeutics, tend to become eclipsed by the highly coloured advertisements of persons and organizations not bound by considerations of professional ethics."

Here, in North America, idealists and realists have differed in their thinking about the public relations programs sponsored by the AVMA, its constituent associations, government veterinary agencies, and the ethical manufacturers of veterinary drugs and supplies.

The idealists believe that public esteem is, and should be, won simply by devotion to high standards of scientific attainment and professional service, without benefit of the newspapers and the radio as mediums of popular education. The realists, knowing human nature, believe that people are apt to learn, without any help, of our shortcomings but, if our accomplishments are to be told, we must tell them ourselves in a continuous program which utilizes all ethical agencies for informing the public.

The acceptance of veterinary news by some 10,000 newspapers, almost 300 radio stations, countless magazines and public information agencies is evidence that people are interested in what the veterinary profession is doing and in the favorable results of its work on the health and economic welfare of America.

Change in the Financing of Federal Meat Inspection

The meat inspection service of the U.S. BAI, created by Act of Congress on April 30, 1891, will henceforth be financed by the meat packers and processors in lieu of congressional appropriations provided in the original act of fifty-six years ago.

Although the Senate Committee on Appropriations restored the item for meat inspection which the House of Representatives had previously removed from the USDA budget, the House forces, led by Representative Dirksen of Illinois, held out for the shift and compelled the Senate to accept, in the waning days of the last Congress, the change. No change in the character of the service is expected.

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CURRENT LITERATURE

ABSTRACTS

Trichomonas Foetus Agglutinins

Trichomonas foetus is not generally considered to penetrate the mucosa of the genital tract but to live in the surface secretions, says the author, who believes that "the accumulation of agglutinins at that site may represent a specific defensive mechanism against the organism."

Four virgin heifers from a herd having no history suggestive of trichomoniasis or other reproductive disturbance were infected by natural service to an infected bull. The author says, "In all four infected heifers, agglutinins to *T. foetus* were eventually demonstrated in the vaginal discharges." No comparable agglutinins were found in the vaginal discharges from uninfected heifers by the same technique.

"Some correlation has been established between the degree of development of the mucus agglutinin and the serological response of the infected heifers," and the agglutinins have been related to the strain of *T. foetus* isolated. [A. E. Pierce: *The Demonstration of an Agglutinin to Trichomonas Foetus in the Vaginal Discharge of Infected Heifers*. *J. Comp. Path. and Therap.*, 57, (Apr., 1947): 84-97.]

Foot-and-Mouth Disease Variants

Serologic variants of Type A virus were identified from field cases of foot-and-mouth disease. These differed only slightly from the standard Type A virus as shown by complement fixation and cross immunity tests. The variants of Type A were alike serologically. Variants of Type B could be divided into three groups, and it is thought that they have type specific antigenic components as well as common antigens. Cross complement fixation tests gave weak reactions as compared to tests with homologous strains. Vaccines made of the Type B variants protected guinea pigs against infection with heterologous strains, but the immunity was more active when challenged with homologous strains. No strains of Type C were encountered among the field cases from western and South Europe. Several cases of mixed infection with Type A and Type B variants were found.—[Erich Traub and Hubert Mohlman: *Investigations on Immunologic Variants of Type A and Type B Virus of Foot-and-Mouth Disease*. *Berl. und Münch. Tierärztl. Wochenschr.*, 1, (July, 1946): 1-5.]

A. G. KARLSON.

Udder Troubles Caused by Milking Machine

Observations on over 150 machine-milked cows are reported in a comparative demonstration of two types of milking machines.

Teat erosions, redness of the ends of the teats, and a high incidence of mastitis occurred constantly in this herd, notwithstanding that the milking operation was closely supervised and recommendations of the manufacturer were followed in using the machine. For that reason, another make of machine was installed. Within about a month, there was marked improvement in the udder health of many of the cows, and by the end of an eight-month period, teat erosions had either disappeared or were so slight that they escaped detection. Moreover, there was a substantial decrease in the number of cases of mastitis.

The machines were referred to merely as "type A" and "type D."—[D. H. Udall: *Teat Erosions*. *Cornell Vet.*, 37, (Apr., 1947): 73-77.]

Control of the Cattle Fever Tick

The greatest efficacy was shown by a spray that contained DDT and hexachlorocyclohexane. When used separately the former was superior. When 1 per cent of each tickicide was incorporated in a spray, all fever ticks were killed within two hours. The residual toxicity for seed ticks persisted for three weeks, and heavy reinestation did not occur for four or five weeks. Both DDT and hexachlorocyclohexane (benzene hexachloride) are superior to the standard arsenical spray and are less hazardous because less poisonous.—[N. G. Cobbett: *Preliminary Tests in Mexico with DDT, Cube, Hexachlorocyclohexane (Benzene Hexachloride) and Combinations Thereof, for the Control of the Cattle Fever Tick, Boophilus Annulatus*. *Am. J. Vet. Res.*, 8, (July, 1947): 280-283.]

Blood Transfusions in Bovine Anaplasmosis

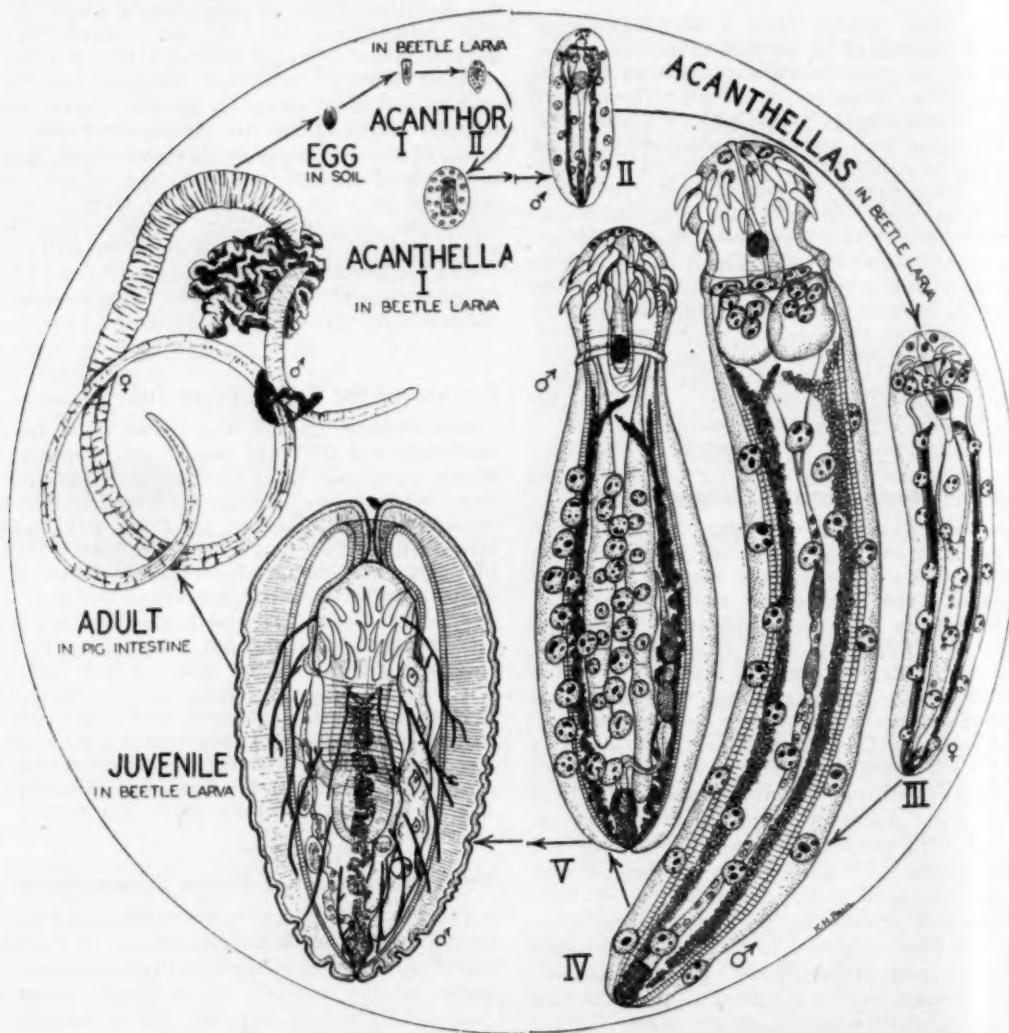
Data on 5 cases of experimentally produced bovine anaplasmosis would indicate that blood transfusions exert a beneficial influence on the course of the disease. The evidence indicates that, since the animal is not able to regenerate red blood cells at a sufficiently rapid rate to overcome the severe anemia which follows the peak of infection, large quantities of blood (8 liters or more) must be transfused.—[John C.

Lotze: Blood Transfusion in Bovine Anaplasmosis. *Am. J. Vet. Res.*, 8, (July, 1947): 284-288.]

The Thorny-Headed Worm alias *Macracanthorhynchus Hirudinaceus*

There appears to be a misunderstanding of the terms "larva" and "metamorphosis" as applied in the ontology of Acanthocephala, the order to which the large thorny-headed worm of swine belongs. *Macracanthorhynchus hirudinaceus*, defiant helminth of the domestic hog, although widely studied by zoologists through the years, has been misconstrued as to distinc-

tions between larval and juvenile worms in the arthropod host. Van Cleave, zoologist of the University of Illinois, in 1935, referred to the newly hatched being as the *acanthor* and the later stage as the *acanthella* stages. In common usage, *metamorphosis* has signified any conspicuous change of form after the early stage of embryonal development, but in more precise usage the transformation applies to the attainment of reproductive organs from rudiments of the larva. In the transformation, the rostellar apparatus of the *acanthor* is wholly lost in the *metamorphosis*. One does not put too much emphasis on the shape of the body rather than on cytologic and histologic changes in the somatic cells. These changes and those



—Drawn by Katherine Hill Paul, *Journal of Pathology*.

The life cycle of *Macracanthorhynchus hirudinaceus* (Phalias) the thorny-headed worm of swine. Drawing of the worm is about 2/3 of the natural size. Otherwise the magnification is 25.3. All figures except the adult worm are redrawn and adapted by K. C. Kates, 1943.

in shape of different genera of the order and the interpretations of them by various authors are discussed. The author attempts to establish a uniform understanding of his nomenclature of the stages of the metamorphosis, that is of the succession of changes taking place between the newly hatched acanthor and the young worm.

Because the stages in the life cycle of *M. hirudinaceus* of swine have been presented in diverse magnification in the literature, a diagram of the stages as they occur in the host (beetle) larva accompanies the article.—[Harvey J. Van Cleave, University of Illinois: *A Critical Review of Terminology for Immature Stages in Acanthocephalan Life Histories*. *J. Parasitol.*, 33, (Apr., 1947): 118-125.]

Tick-Borne Fowl Spirochetosis

The author records what is believed to be the first finding of tick-borne avian spirochetosis in the United States. Common fowl ticks, *Argas persicus*, reported in England and France as vectors of *Spirochaeta gallinarum*, the causative agent of spirochetosis, were obtained from a poultry raiser in El Paso, Texas. These ticks were maintained on a White Leghorn rooster which shortly became ill with symptoms of spirochetosis, but the causative agent was not demonstrated. Several hundred progeny from these ticks and a few unfed nymphs and adults were then allowed to feed on a White Leghorn pullet, which developed marked symptoms of the disease in six days. Spirochetes were present in blood smears taken on the sixth to the eighth day, but they were not found after the eighth day.—[A. L. Burroughs: *Fowl Spirochetosis Transmitted by Argas Persicus (Oken)*, 1818 from Texas. *Science*, 105, (May 30, 1947): 577.]

Stachybotryotoxicosis in Ukrainian Horses

Stachybotryotoxicosis is the name given to an apparently new disease of horses in the Ukraine. It is marked by three stages: (1) irritation of the lips, mouth, nose, and throat with extensive desquamation of epithelium and swelling and soreness of the submaxillary lymph glands; (2) leucopenia, lasting from several days to a month; (3) sudden rise in temperature, followed by ulceration of the mouth and throat, persistence of leucopenia, and development of agranulocytosis. Recovery usually occurs after the first or second stage.

Hay infected with the saprophytic mold, *Stachybotrys alternans*, is thought to be the etiologic agent. Continued feeding of infected hay for three weeks caused death, as did the feeding of experimentally infected fresh hay. Initial symptoms appeared in about thirty-six hours. Human infection, characterized by der-

matitis and respiratory symptoms, resulted from direct contact with the moldy hay.—[V. G. Drokotko: *Stachybotryotoxicosis—A New Disease of Horses and Humans*. *Am. Rev. Soviet Med.*, 2 (1945): 238-242; abstr. in *J. Am. Pharm. A.*, May, 1947.]

Relation of Eggshell Color to Hatchability

A link between the shell color of eggs and hatchability was established in a study of over 64,000 White Plymouth Rock, New Hampshire, and Barred Plymouth Rock eggs. Eggs with extremely light-colored shells from the first two breeds hatched poorly in comparison with medium-brown to dark-brown eggs from those breeds. Light-colored eggs laid by a flock of Barred Plymouth Rocks hatched as well as medium-brown-shell eggs from this flock, but poorer than dark-brown ones.—[G. F. Godfrey: *The Relationship of Eggshell Color to Hatchability in Some Brown Egg Laying Breeds*. *Poultry Sci.*, 26, (July, 1947): 381-388.]

BOOKS AND REPORTS

Mammals of North America

A comprehensive book on the animal world, written for popular reading, it nevertheless is thorough and informative for the veterinarian, should he be interested in enlarging or refreshing his background on the original livestock, and other mammals, of America. There are 20 chapters covering 1,500 species under 94 headings. Each of the main groups of North American mammals has been considered. A brief review of the genera, subgenera, or important species is given at the close of each chapter concerning especially diversified kinds of mammals. Excellent drawings lend considerable interest and value to the text.

The true marine mammals (whales, dolphins, porpoises, sea lions, seals) and the aerial mammals (bats) are also described.

Thirty pages of references listed by species add weight and usefulness to the book.—[*Mammals of North America*. By Victor H. Cahalane, chief biologist of the National Parks, U. S. A. 682 pages. Cloth. Illustrated. 1947. The MacMillan Co., New York, N. Y. Price \$7.50.]

Practical Emulsions

This is a book which deals only briefly with the theory of emulsification. Instead, its pages are devoted entirely to the practical aspects of forming and using emulsions. There are formulas and compounding directions for emulsions which are useful in almost every field of commerce and medicine. Even a review of the subjects covered seems to be unnecessary,

since apparently there is no subject missing from the list.

Of especial interest to veterinarians is a brief chapter on agricultural and insecticide sprays, with emulsifying and dispersing agents. For a veterinarian engaged in producing these substances for his own use or for resale, the book is an encyclopedia of information. For the practising veterinarian, it serves to explain how and why some preparations work, while others do not.

Each chapter is accompanied by a bibliography of references suitable for more detailed study or for theoretical basic data.—[H. Bennett: *Practical Emulsions. Second edition. 568 pages, cloth. Chemical Publishing Co., Inc., 26 Court St., Brooklyn 2, N. Y. Price \$8.50.*]

The Tung Tree (*Aleurites*): Its Toxic Principles

The lift given to tung-tree culture in this country when the Oriental source was blocked by the war led to the planting of 200,000 tung trees (*Aleurites*, spp.) in the Gulf Coast States, which, by 1944, yielded 9,728,000 lb. of tung oil. The advantage of tung oil to the industries is its exceptional drying properties in paints,



—After M. W. Emmel, 1947.

Foliage and fruit of the tung tree—both toxic.

varnishes, and other waterproofings. Like the oils of linseed, cottonseed, castorbean, and such, it is extracted from the ground seeds by pressure or solvents. As the meal contains 6 per cent of ammonium, it has merits as a fertilizer or fertilizer filler but unfortunately contains two toxic substances which disqualify it as a stockfeed. The one is a saponin and the other an "acetone-soluble fraction."

The authors set out on the important task to determine the nature of the toxic substances and, if possible, methods of detoxifying both the meal and the fresh leaves. *Aleurites fordii* and other species were studied and methods described, together with the safe amounts of the

finished product that could be added to the basal rations of chicks.

Of the five species examined (*fordii*, *montana*, *moluccana*, *triloba*, *trisperma*), saponin was most abundant in *A. fordii*, the second toxic substance in three of the other species analyzed. Changes in the degree of toxicity from the two substances according to the duration of storage were determined.—[*The Toxic Principle of the Tung Tree. By M. W. Emmel, D.V.M., University of Florida. Technical Bulletin, 431, June, 1947. 35 pages. 6 tables, 3 charts. Agricultural Experiment Station, Gainesville. Public document.*]

Meat Inspection

This January, 1947, edition is a complete listing of the meat inspection regulations, listed under the appropriate titles, chapters, sub-chapters, parts, and paragraphs. It lists, also, the laws under which the regulations are made, and has a comprehensive index.—[*Regulations Governing the Meat Inspection of the United States Department of Agriculture, Edition of January, 1947. 200 pages. United States Government Printing Office, Washington, D. C.*]

Poultry House Requirements.—This is a board-bound, illustrated booklet of 26 pages on the building of poultry houses for the profitable production of fowl and eggs—a report by the Poultry Committee of the Rutgers University Farm Building Institute, identified as *Bulletin 732, New Jersey Agricultural Experiment Station, May, 1947. Public document.*



THE NEWS

The AVMA Exhibit at the American Medical Association Convention

A booth sponsored by the American Veterinary Medical Association attracted exceptional interest among physicians registered for the centennial session of the American Medical Association. The enthusiasm with which the exhibit was received is highly gratifying, and many new contacts were established,—especially among dermatologists who were particularly noticeable by the persistence of their questions on the condition portrayed.

Two mimeograph pages had been prepared. One presented a résumé of swine erysipelas and called attention to the fact that it is caused by *Erysipelothrix rhusiopathiae*, and that it can be transmitted to man where it is known as the erysipeloid of Rosenbach which must be differentiated from human erysipelas caused by streptococci. The other sheet listed some of the newer references on the condition.

The degree of interest shown may be judged from the fact that three attendants, Drs. J. D. Ray, R. C. Klussendorf, and G. W. Stiles, were kept busy discussing the exhibit with physicians who stopped to ask questions. They counted 800 persons from all parts of this country and from 15 foreign countries who spent more than five minutes each in discussing the material presented. No estimate was made of the number who viewed the exhibit in passing, or those who merely stopped to read the legends and look at the specimens.

The Board of Governors, Drs. C. C. Hastings, B. T. Simms, and W. A. Hagan, authorized preparation of material for display among the scientific exhibits at the centennial session of the AMA. A committee consisting of Drs. L. A. Dykstra, J. G. Hardenbergh, R. C. Klussendorf, J. V. Laeroix, and W. A. Young was



The AVMA exhibit at the centennial convention of the American Medical Association, held at Atlantic City on June 9-13, 1947.

appointed to choose a suitable subject, and to then collect and arrange the material for the display.

Numerous suggested subjects were sifted until the Committee unanimously agreed on swine erysipelas. Material on this subject was solicited from the Bureau of Animal Industry, USDA, and from Drs. L. Van Es, J. D. Ray, and Frank Breed; the pictures were obtained from several publications. When the specimens and pictures had been assembled, Dr. J. S. Bengston, Pathological Laboratory, BAI, assisted the Committee in presenting it, and advised Mr. McAleer of the McAleer Display Studios, where the exhibit was prepared, about displaying it.

This exhibit was on display at the Cincinnati meeting and will be at Atlantic City for the meeting of the American Public Health Association on Oct. 6-10, 1947.

APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws—Article X, Section 2.

First Listing

BACHMAN, WILLIAM E.
1547 Superior Ave., Cleveland 14, Ohio.
D.V.M., Cincinnati Veterinary College, 1911.
Vouchers: J. B. Morse and C. H. Forthofer.

BURNS, A. J.
Millhousen, Ind.
D.V.M., Indiana Veterinary College, 1917.
Vouchers: D. D. Baker and D. C. Wood

CAIRY, FOREST W.
927 S. Mulberry St., Sioux City, Iowa.
D.V.M., Iowa State College, 1913.
Vouchers: T. W. Munce and L. E. Willey.

JAMES, DAVID E.
1076 Youngstown Rd., Warren, Ohio.
D.V.M., Ohio State University, 1934.
Vouchers: W. A. James and C. R. Cole.

MILLER, CHARLES S.
St. Charles, Iowa.
D.V.M., Washington State College, 1938.
Vouchers: H. U. Garrett and L. C. Blackburn.

MURPHY, EDWARD A.
4842 Farnam, Omaha 3, Neb.
D.V.M., Kansas State College, 1936.
Vouchers: M. L. Steele and J. N. McIlroy.

NEWBY, WINSTON C.
R. R. 2, Sardis, B. C.
D.V.M., Ontario Veterinary College, 1943.
Vouchers: K. H. Thompson and J. G. Jervis.

RICE, WALTER M.
247 Talbot St., St. Thomas, Ont.
D.V.M., Ontario Veterinary College, 1936.
Vouchers: J. M. Rice and W. R. Krill.

SCHAFFER, AUSTIN L.
P. O. Box 99, Sebringville, Ontario, Canada.
D.V.M., Ontario Veterinary College, 1937.
Vouchers: R. A. MacIntosh and J. H. Ballantyne.

Second Listing

Beck, Lawrence L., D.V.M., 3539 S. Rockwell St., Chicago, Ill.
Brown, Earl F., D.V.M., Manilla, Indiana.
Carlson, Herbert C., D.V.M., 116 Wm. H. Taft Road, Cincinnati 19, Ohio.

Chavez G., Carlos E., D.V.M., Peruvian Embassy, Military Attaché, 1301 15th S., N. W., Washington 5, D. C.

Cowton, Louis V., D.V.M., 3520 S. Rockwell St., Chicago, Ill.

Fechner, Herbert H., D.V.M., Syracuse, Neb.

Getty, William A., D.V.S., Aurora, Mo.

Hill, Leonard J., D.V.M., 3035 South 13th Ave., (So.), Birmingham, Ala.

Nilsson, Fritz M., D.V.M., Royal Veterinary College, Stockholm, Sweden.

Washburn, Paul M., D.V.M., 21 Portsmouth St., Jackson, Ohio.

Wiley, Joseph A., D.V.M., 4545 Reading St., Cincinnati 29, Ohio.

1947 Graduate Applicants

First Listing

The following are graduates who have recently received veterinary degrees and who have applied for AVMA membership under the provision granted in the Administrative By-Laws to members in good standing of junior chapters. Applications from this year's senior classes not received in time for listing this month will appear in later issues. An asterisk (*) after the name of a school indicates that all of this year's graduates have made application for membership.

Texas A & M College

STODDARD, HANNIS L., JR., D.V.M.
Box 687, Clarksdale, Miss.
Vouchers: G. D. Gates and M. J. Luster.

Washington State College*

CLARK, CARL H., D.V.M.
2518 Orange St., La Crescenta, Calif.
Vouchers: J. E. McCoy and D. A. Adler.

Second Listing

Colorado A & M College*

Borthwick, Norman M., D.V.M., Bolton Animal Hospital, Albuquerque, N. M.
Brasmer, Timothy H., D.V.M., 2733 Garrison Ave., Evanston, Ill.

Briggs, Joseph L., D.V.M., 944 Michigan Ave., Evanston, Ill.

Calderwood, George S., D.V.M., Box 103, Crary, N. Dak.

Carney, John R., D.V.M., Linden Park, Cortez Ave., Prescott, Ariz.

Cascinal, Aldo P., D.V.M., 32 14th Ave., San Mateo, Calif.

Hawley, Robert L., D.V.M., 125 W. 10th Street, Astoria, Ore.

Hyland, Alfred D., D.V.M., 945 Humboldt Parkway, Buffalo, N. Y.

Jessup, Roger V., D.V.M., 5431 N. San Fernando Rd., West, Glendale 3, Calif.

Johnston, John H., D.V.M., La Junta, Colo.

Kelling, Ralph V., D.V.M., 1150 Lincoln Place, Boulder, Colo.

McChesney, Albert E., D.V.M., 708 Remington, Ft. Collins, Colo.

McClintock, George E., D.V.M., 485 E. Highland, Sierra Madre, Calif.

Mabry, A. J., D.V.M., Box 124, Plains, Texas.

Powers, Kenneth L., D.V.M., Route 2, Box 11, Colorado Springs Colo.

Schroeder, Robert J., D.V.M., 10923 Sampson Ave., Lynwood, Calif.
 Smartt, Jack W., D.V.M., Route 2, Box 126, Lamar, Colo.
 Sudduth, William H., D.V.M., Walden, Colo.
 Thurman, Joe B., D.V.M., 2807 Jefferson Ave., Ogden, Utah.
 Wilson, John A., D.V.M., Wyoming Hereford Ranch, Cheyenne, Wyo.

Iowa State College

Armstrong F. D., D.V.M., Remer, Minn.
 Austin, Victor H., D.V.M., 40 West Santa Clara Blvd., Ventura, Calif.
 Denis, Victor M., D.V.M., No. 3 Calle 18 Este Bis, Panama City, Panama.
 Houmes, Richard L., D.V.M., Central City, Iowa.
 McCann, Francis J., D.V.M., 114 So. Wabash, Kirksville, Mo.
 Moye, Jack, D.V.M., 114 South Wabash, Kirksville, Mo.

Kansas State College*

Aldrich, Eugene C., D.V.M., 1530 S. San Diego Blvd., Escondido, Calif.
 Bivin, Dale L., D.V.M., Route 3, Manhattan, Kan.
 Cohen, Harold K., D.V.M., 820 Laramie, Manhattan, Kan.
 Cook, George R., D.V.M., O'Neill, Neb.
 Dietrich, LeRoy E., Jr., D.V.M., P. O. Box 1116, Wichita, Kan.
 Eisenberg, David, D.V.M., 40 Elliot Place, Bronx 52, N. Y.
 Hains, Phillip, D.V.M., Box 322, Kansas State College, Manhattan, Kan.

Hammond, Mary L., D.V.M., 531 S. Whitcomb, Ft. Collins, Colo.
 Hickney, Phyllis M., D.V.M., 322 N. 17, Manhattan, Kan.

Jewell, Charles K., D.V.M., 38412 Cleveland Road, Elyria, Ohio.

Jones, Lloyd N., D.V.M., Schuyler, Neb.
 Joran, Lawrence M., D.V.M., 505 W. 162nd Street, Washington Heights, New York 32, New York.

Kutz, Joel N., D.V.M., 172-90 Highland Ave., Jamaica, N. Y.

Lawrence, Jacob, D.V.M., 43-11 76th Street, Elmhurst, N. Y.

Meyer, Norvan L., D.V.M., 1223 Bluemont Street, Manhattan, Kan.

Middleton, Kenneth B., D.V.M., 1508 Humboldt, Manhattan, Kan.

Nossov, Gabriel, D.V.M., 780 Pelham Parkway, Bronx, N. Y.

Price, William A., D.V.M., 304 E. 15th Street, Pittsburg, Kan.

Rollag, Ole J., D.V.M., Beaver Creek, Minn.

Rook, Seymour, D.V.M., 1090 E. New York Ave., Brooklyn 12, N. Y.

Tague, Carl W., D.V.M., 531 N. Manhattan Ave., Manhattan, Kan.

Tarrant, Ansel B., D.V.M., 1114 Bluemont, Manhattan, Kan.

Thayer, Charles B., D.V.M., 20 Canal Street, Middletown, N. Y.

Texas A & M College

Patterson, Carol M., D.V.M., General Delivery, Eastland, Texas.

Washington State College*

Balch, Roscoe K., D.V.M., 308 North 4th, Dayton, Wash.
 Bemis, Clyde M., D.V.M., N. 1628 Calispel, Spokane 13, Wash.
 Bender, John F. Jr., D.V.M., 18520 40th Pl., N. E., Seattle 55, Wash.
 Button, Robert A., D.V.M., Rt. 6, Box 143AA, Tacoma, Wash.
 Cohn, Leland, D.V.M., 659 11th Ave., San Francisco, Calif.
 Delna, Dolly, D.V.M., Rt. 6, Box 1019, Phoenix, Ariz.
 Ford, Robert I., D.V.M., Box 428, Rt. 1, Enumclaw, Wash.
 Fox, Donald L., D.V.M., 201 Washington, Pullman, Wash.
 Goecken, Ned V., D.V.M., 50 Clark Drive, San Mateo, Calif.
 Lydiard, Harry L., D. V. M., Route 2, Box 172, Medford, Ore.
 Lynch, Patricia J., D.V.M., 935 W. Pedregosa, Santa Barbara, Calif.
 Maberry, Mathew B., D.V.M., 342 E. 54th Street, Seattle, Wash.
 Rice, James G., D.V.M., c/o Dr. C. J. Ferreira, Box 383, Redding, Calif.
 Richter, Ernest R., D.V.M., Rt. 1, Box 970-A Plummer Ave., San Jose, Calif.
 Rust, Jay B., D.V.M., Ellis Vet. Hospital, 2022 E. 4th Ave., Olympia, Wash.
 Wallis, Jay C., D.V.M., 2977 Stoddard, San Bernardino, Calif.
 Werth, Carl C., D.V.M., 1209 Kamiaken, Pullman, Wash.
 White, Hal D., D.V.M., Baker, Ore.
 Woods, Irene F., D.V.M., Box 142, Kinzua, Ore.

U. S. GOVERNMENT

Foot-and-Mouth Disease Consultant.—The U. S. Department of Agriculture has announced the appointment of Mr. Charles H. Corlett as consultant to Secretary of Agriculture Clinton P. Anderson in connection with the foot-and-mouth disease eradication campaign now being undertaken in Mexico. Mr. Corlett, a retired army officer, will work with Dr. Maurice Shahan of the U. S. BAI, codirector of the joint campaign. He has had extensive experience with the types of army equipment now being used in the eradication work.

The pH Test in the Inspection of Fish.—Contrary to what might be expected, investigation showed that a surface pH test to determine the freshness of fish fillets is of little use despite the fact that such a test is definitely helpful in the veterinary inspection of oysters. At the request of the Army, the U. S. Fish and Wildlife Service attempted to develop an objective test to supplement the organoleptic examination conducted by the Veterinary Corps in inspecting fish, using comparisons of pH changes with organoleptic grading and time of storage in ice of various species (haddock, dabs, cod, etc.). The data obtained did not show a dependable relation between pH and freshness in thawed fish.

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U. S. BAI are reported as of July 28, 1947, by Chief B. T. Simms.

TRANSFERS

Julius W. Amsiejus, from Albuquerque, N. M., to Mexico City, Mexico.

Lowell R. Barnes, from San Juan, Puerto Rico, to Springfield, Ill.

Robert K. Benn, from Jefferson City, Mo., to Oklahoma City, Okla.

Zackie H. Bridges, from Oklahoma City, Okla., to Montgomery, Ala.

Charles W. Brown, from Fort Worth, Texas, to Little Rock, Ark.

Wilburn B. Cochran, from Oklahoma City, Okla., to Mexico City, Mexico.

James H. Cooper, from San Antonio, Texas, to Fort Worth, Texas.

Emmanuel F. Coyle, from Augusta, Me., to Boston, Mass.

Gibson D. Dibble, from E. Lansing, Mich., to Lansing, Mich.

Fred F. Fischer, from Boise, Idaho, to Jefferson City, Mo.

Ralph C. Fish, from San Juan, Puerto Rico, to Baltimore, Md.

Charles Johnson, from San Francisco, Calif., to Muncie, Ind.

Martin Kagan, from Mexico City, Mexico, to New Orleans, La.

Daniel F. McCarthy, from Denver, Colo., to St. Louis, Mo.

Jacob L. Medaris, from Reno, Nev., to Oklahoma City, Okla.

Carl Vernon Metcalf, from Sioux City, Iowa, to Kansas City, Kan.

James H. Milligan, Jr., from Montgomery, Ala., to Mexico City, Mexico.

Thomas A. Meir, from Sioux City, Iowa, to Wichita, Kan.

LaRoy Noyes, from Fort Worth, Texas, to Mexico City, Mexico.

Harold H. Pas, from Wichita, Kan., to Washington, D. C.

Erling R. Quortrup, from Bowie, Md., to Pullman, Wash.

Allen W. Rice, from Little Rock, Ark., to Mexico City, Mexico.

Willard S. Young, from Harrisburg, Pa., to Mexico City, Mexico.

Richard P. Salisbury, from Kingston, N. Y., to Cleveland, Ohio.

Richard D. Shuman, from Portland, Ore., to Washington, D. C.

Dale Suplee, from Boise, Idaho, to Beltsville, Md.

Arthur R. Thiele, from Chicago, Ill., to King-
ston, N. Y.

Charles Webster, from Topeka, Kan., to Mexico City, Mexico.

J. T. Westbrook, from Fort Worth, Texas, to Mexico City, Mexico.

RESIGNED

David B. Bender, Springfield, Mass.

Edward G. Bland, San Francisco, Calif.

Rex H. Brooks, Philadelphia, Pa.

Russell R. Davis, Kansas City, Kan.
Thomas M. Eagle, Jefferson City, Mo.
Austin Falsom, Duluth, Minn.
William V. Howells, St. Louis, Mo.
Martin O. Kaplan, Boston, Mass.
Robert M. Parker, Storm Lake, Iowa.
Charles L. Schmidt, Cincinnati, Ohio.
Morris L. Tropp, Philadelphia, Pa.
Claude R. Willey, Jackson, Miss.

RETIRED

Chester Hassel, Baltimore, Md.
Frederick S. Hope, Philadelphia, Pa.
Leslie B. Vermillion, Kansas City, Kan.

DIED

Howard C. Gale, Topeka, Kan.
Perl F. Strait, Madison, Wis.

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Dr. Byerly New Animal Husbandry Head in the USDA.—Dr. B. T. Simms, chief of the U. S. BAI, has announced the appointment of Dr. T. C. Byerly as head of the Animal Husbandry Division, effective August 1. He will coördinate animal husbandry and disease-control research of the Bureau.

A native of Melbourne, Iowa, Dr. Byerly worked with the Bureau from 1929 to 1937, when he left to become professor of poultry husbandry at the University of Maryland. He returned to the BAI in 1941 as head of poultry-husbandry investigations and as supervisor of the National Poultry Improvement Plan. Dr. Byerly was in charge of the UNRRA's livestock rehabilitation program for a year and a half immediately after the war. His headquarters will be at the Agricultural Research Center, Beltsville, Md.

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Balancing the Budget.—The Washington correspondent of the American Medical Association writes that information of incalculable value on German science captured and stored in Germany was sacrificed when the experts of the Department of Commerce, working on the documentations, had to be dismissed for want of the necessary congressional appropriation. Minister Molotov valued at \$10 billion the scientific information captured in eastern Germany. Up to the time the American forces had to abandon their work, information worth billions to American industry and science had been examined.

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Army to Build "Greatest Medical Center."—Plans for the "greatest medical center in the world" have been announced by the Army Medical Department. It will be known as the Army Medical Research and Graduate Teaching Center and will comprise a 1,000-bed general hospital, Army Institute of Pathology, Army Medical Museum, Army Institute of Medicine and Surgery, laboratories, administration buildings, an animal farm, and various other projects. It will be constructed in Forest Glen, Md., just outside of Washington, at an estimated initial cost of \$40 million.—*From Surgeon General's Office Release.*

COMMENCEMENTS

Colorado A. & M. College

At the commencement exercises of the Colorado A. & M. College, Fort Collins, on June 13, 1947, the following candidates were presented for the D.V.M. degree.

N. M. Borthwick	Ralph V. Kelling
Timothy M. Brasmer	Albert E. McChesney
Joseph Lee Briggs	G. E. McClintock
G. S. Calderwood	A. J. Mabry
John Russell Carney	Kenneth Lee Powers
Aldo Peter Cascinali	Robert J. Schroeder
Robert L. Hawley	S. S. Schroeder
Alfred D. Hyland	Jack William Smart
Roger V. Jessup	William H. Sudluth
John H. Johnston	Joe Ben Thurman
	John A. Wilson

Albert E. McChesney was the high man in point of scholarship for the division and also received the Borden Award.

• • •

Iowa State College

At the commencement exercises of the Iowa State College, Ames, on June 13, 1947, the following candidates were presented for the D.V.M. degree.

F. D. Armstrong	Francis J. McCann
Victor Heber Austin	Harold J. Morgan
Bertrand O. Combs	Jack Moye
Edward C. Connor	John W. Patterson
Victor Manuel Denis	Robert R. Rognes
Richard L. Houmes	Hermel Rosas
Richard T. Howard	Robert O. Sander
Leonard A. Larson	Dean W. Werring

Gene Collins Phelps received the D.V.M. degree on Aug. 30, 1946.

Dr. Victor H. Austin was the winner of the George Judisch Award, as honor student in veterinary medicine. Winners of the G. G. Graham awards, based on the records of students' work in clinical practice, were: Dr. Victor H. Austin, first prize; and Dr. Richard T. Howard, second prize.

• • •

State College of Washington

At the commencement exercises of the State College of Washington in June, Dean R. E. Nichols presented the following candidates for the D.V.M. degree.

Roscoe Balch	Harry L. Lydiard
Clyde Merwin Bemis	Patricia J. Lynch
John Frank Bender	Matt B. Maberry
Robert Allan Button	James G. Rice
Carl Heritage Clark	Robert E. Richter
Leland Cohn	Jay B. Rust
Dolly Delno	Jay C. Wallis
Robert L. Ford	Carl Clifford Werth
Donald Lewis Fox	Harold Dean White
Ned V. Goecken	Irene Frances Woods

AMONG THE STATES AND PROVINCES

Arkansas

District Meeting.—The Arkansas Veterinary Medical Association held a district meeting on July 23 at the hospital of Dr. J. D. Morton in Pine Bluff. Dr. Morton led the clinical discussion. Mrs. R. A. Dickinson and Mrs. Dale Boyd were hostesses to the ladies.

S/T. D. HENDRICKSON.

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Anthrax Outbreak Under Control.—Dr. L. E. Ross, DeWitt, reported (*Arkansas Gazette*, July 22) that an anthrax outbreak in southern Arkansas has been brought under control. In three weeks, 4,000 head of horses and cattle have been vaccinated, following the death of 150 animals. Farmers are burning the dead animals.

California

State Association.—The California State Veterinary Medical Association held its annual convention in San Diego, June 23-25, 1947. Over 300 members from all parts of the country attended the sessions. The program included the following speakers: Dr. W. A. Hagan, dean, New York State Veterinary College, and president-elect, AVMA; Dr. C. M. Haring, dean of the new veterinary school to be established on the University of California campus at Davis; Dr. J. Traum, University of California; Dr. R. Dyar, California State Public Health Department; Dr. Kenneth Townsend, Los Angeles; and Dr. W. J. Pistor, University of Arizona, Tucson.

The officers of the association for 1947-1948 are: Dr. Charles H. Ried, *president*; Drs. S. T. Michael, F. P. Wilcox, and Floyd H. White, *first, second, and third vice-presidents*, respectively; Dr. Oscar J. Kron, *treasurer*; and Mr. Charles S. Travers, *executive secretary*.

S/CHARLES S. TRAVERS, *Secretary*.

• • •

Sacramento Valley Association.—The June 27 meeting of the Sacramento Valley Veterinary Medical Association was held at O'Kane's Inn, Sacramento. Dr. Edward Records of the University of Nevada spoke on "Bacillary Hemoglobinuria" and used lantern slides and specimens to augment his lecture. Dr. Records is an outstanding authority in the research field of this particular malady. The discussion led by him at the close of his presentation was of interest to the entire assembly.

Dr. S. T. Michael, veterinarian in charge of the S.P.C.A. Hospital in San Francisco, and first vice-president of the California State Veterinary Medical Association, spoke on "Leptospirosis in the Dog" at the July 25 meeting of the association, held at the Square Deal Cafe in Sacramento. A discussion followed Dr. Michael's lecture.

Officers for the coming year were placed in

nomination to be voted upon at the August meeting.

s/H. M. O'REAR, *Publicity Chairman.*

Richest Farm Counties.—The five richest farming counties in the United States are all in California: Los Angeles, Fresno, Tulare, San Joaquin, Kern.

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Watch for Ticks.—State Veterinarian J. V. Knapp has urged all cattle owners to keep a sharp watch for cattle ticks and to send any specimens found to the State Livestock Sanitary Board for identification.

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Annual Meeting.—The Idaho Veterinary Medical Association held its annual convention at Boise, June 30 and July 1, 1947. The speakers were: Dr. Glen C. Holm, professor of veterinary science, University of Idaho; Moscow; Dr. H. C. Smith, Allied Laboratories, Sioux City, Iowa; Dr. W. A. Hagan, dean, New York State Veterinary College, and president-elect, AVMA; Dr. R. E. Nichols, dean of the College of Veterinary Medicine, Washington State College, Pullman; Dr. F. X. McArthur, Boise; and Dr. G. C. Anderson, extension dairyman, University of Idaho, Moscow.

The officers for the coming year are: Dr. M. Grootes, Twin Falls, *president*; Dr. Don Copple, Boise, *vice-president*; and Dr. A. P. Schneider, Boise, *secretary and treasurer*.

s/A. P. SCHNEIDER, *Secretary.*

Dr. Holm Vice-Director of the Experiment Stations.—Dr. Glenn C. Holm, experiment station veterinarian at the University of Idaho, Moscow, for the past nine years, has been ap-



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pointed vice-director of the station, replacing Dr. C. W. Hungerford, vice-director for the past twenty years.

Dr. Holm is in charge of all research in the College of Agriculture and at its five branch stations. His appointment to this post followed shortly after he became head of the University's new Department of Veterinary Medicine on July 1.

Dr. Hungerford will devote full time to his duties as dean of the University's graduate school and as head of the Department of Plant Pathology.

Illinois

Governor Reappoints Racing Commission.—The Illinois Racing Board appointed by Governor Dwight H. Green in 1941 for a term of six years were all reappointed for a similar tenure. The members, William E. Fay, Frank E. Mandel, and Major Ednyfed H. Williams, are credited with calm dignity, clean administration, and keen executive ability.

National BCG Laboratory.—The U. S. Public Health Service, coöperating with the Institute of Tuberculosis Prevention of the University of Illinois, the Chicago Tuberculosis Institute, and the Municipal Tuberculosis Sanitarium of Chicago, is establishing a BCG laboratory in Chicago which is to be charged with producing BCG vaccine for the whole country. The state has appropriated \$361,000 for the construction of the necessary building. Dr. A. C. Ivy, official of the University of Illinois medical schools and hospitals, has reported that 9,000 BCG vaccinations have been practised in Illinois during the last ten years. On the basis of the results obtained he is quoted (*Chicago Times*, July 26) as saying that in twenty to forty years there will be no more need of tuberculosis sanatoriums.

National Farm Week.—Mayor Martin H. Kennelly of Chicago has proclaimed the week of Nov. 29 through Dec. 7, 1947, as National Farm Week, at which time the 4-H Club Congress, the International Farm Association, the International Live Stock Exposition, and the National Farm shows will have their meetings. The National Farm Show will present the first big showing of farm, dairy, and poultry equipment at the Coliseum throughout the week.

s/ARTHUR HOLLAND.

Indiana

Dr. W. D. Daugherty Joins Pitman-Moore.—Dr. W. D. Daugherty, formerly of Sterling, Ill., has been made director of the veterinary medical department of the Pitman-Moore Division, Allied Laboratories, Inc. He will supervise veterinary research, development and improvement of products, and service to veterinary clients.

After studying journalism at the University of Wisconsin, Dr. Daugherty received his D.V.M. degree from Iowa State College, Ames.



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Kansas

Is This a First?—Kansas State Veterinary Association, says the *American Veterinary Review* (Oct., 1884, page 327), held a meeting at Topeka, Sept. 12, 1884, and elected A. A. Holcombe, state veterinarian, as *president*; Ed. R. Allen, *secretary*; and J. H. Wilhite, *treasurer*.

Kentucky

Electron Microscope for University.—At a ceremony in which Governor Simeon S. Willis and President Herman L. Donovan took part, the Keeneland Foundation, whose income is derived from Lexington's nonprofit race course, loaned a recently purchased \$15,000 electron microscope to the University of Kentucky for use in the laboratory of Dr. O. F. Edwards. The presentation was made with appropriate remarks by Dr. Fred W. Rankin of the Grayson Foundation which is sponsoring a fund of \$600,000 to finance researches on certain diseases of horses.

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Ambassador Bruce.—James Bruce of Baltimore, President Truman's choice for the important office of Ambassador to Argentina, replacing George Messersmith, is a prominent figure of the dairy industry.

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President Moscrip announced that milk production in 1946 was 119 billion pounds which was 10 million pounds more than in 1940, which is out of line with the increase of 11 million in the population during the six-year period.

Michigan

Western Association.—The Western Michigan Veterinary Medical Association held a dinner meeting and ice cream social at the Rowe Hotel in Grand Rapids in July. Following the business meeting, officers were elected for 1947-1948: Dr. M. F. Lamoreaux is the *president*; Dr. Raymond Beebe, *vice-president*; and Dr. P. V. Howard, *secretary-treasurer*.

No meeting for August was scheduled.

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Dr. Armstrong Retires from Drug Business.—Dr. W. N. Armstrong of Concord has recently sold his drug business after more than fifty years of service to his community. A native of London, Ont., Dr. Armstrong was graduated in veterinary medicine from the University of Toronto, and, following postgraduate work in Edinburgh, Scotland, he settled in Concord at the request of a delegation of farmers. He was instrumental in organizing the Jackson County Veterinarians' Association and the Jackson County Druggists' Association, of which he was the first president. He is a past president of the Michigan State Veterinary Medical Association.

As a justice of the peace and member of the village council, he has been active in securing many civic improvements. He was secretary of the first telephone company and helped to bring about the reconstruction of an opera house and the local grist mill, both of which had been destroyed by fire.

Dr. Armstrong expects to continue in service as a veterinarian and justice of the peace.

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country's foremost small animal doctors. The article is a brief but true biography of the man and the slumbering profession of forty years ago. Flynn's recollection of the way his audiences used to thin out when he first began to speak on small animals is a reminder of the AVMA meeting of 1901 when the audience left Dr. Michener talking to empty seats when he brought a cow into the clinic arena. Think of that! A cow before the august equinologists! Yet most of them lived to listen unashamed to Udall, Williams, Devine, Lothe, Ferguson, Caldwell *et al.* Wonder if any one is laughing at Frick's fling at ichthyotherapy.

* * *

Kansas City Meeting.—The July 15 meeting of the Kansas City Veterinary Medical Association was held at the Hotel Continental. Dr. James Carey, West Liberty, Iowa, spoke on "Problems of General Practice with Special Reference to Diseases of Cattle."

No August meeting was scheduled.

S/GAIL B. SMITH, *Secretary.*

Montana

Annual Meeting.—The thirty-seventh annual meeting of the Montana Veterinary Medical Association was held in Billings on July 10-11, 1947. Mr. Herbert Buck, secretary of the Billings Chamber of Commerce, delivered the address of welcome, with the response by Dr. Hadleigh Marsh. President E. M. Joneschild addressed the association preceding the business meeting. The following speakers took part in the scientific program.

Dr. W. A. Hagan, president-elect of the AVMA, and dean of the New York State Veterinary College, Ithaca: "The American Veterinary Medical Association," and "The No-Lesion Problem in Bovine Tuberculosis."

Dr. H. C. Smith, Allied Laboratories, Sioux City, Iowa; "Anaplasmosis in Cattle."

Dr. C. R. Schroeder, assistant director, Animal Industries Division, Lederle Laboratories, Pearl River, N. Y.: "Sulfonamide Therapy."

Dr. Roy E. Nichols, dean, College of Veterinary Medicine, Washington State College, Pullman: "Clinical Blood Examinations."

James Morrison, M. D., Billings: "Special Eye Surgery" (clinical demonstration).

Dr. H. L. Nordell, Great Falls: "Rumenotomy" (clinical demonstration).

Dr. H. F. Wilkins, acting state veterinary surgeon, Helena: "Report of the State Veterinarian."

Dr. G. W. Cronen, veterinarian in charge, U. S. BAI, Helena: "Report of the U. S. BAI."

Reports of the veterinary research laboratory were made by the following staff members: Dr. A. M. Jasmin, "Redwater Disease;" Dr. Karl F. Swingle, "Urinary Calculi;" Dr. Lee Seghetti, "Enterotoxemia" and "Viability of Nematode Larvae in Eastern Montana;" Dr. E. A. Tunnicliff, "Mastitis in Sheep."

Officers for the coming year are: Dr. V. H. Fisher, Lewistown, *president*; Dr. G. M. Wright, Billings, *vice-president*; Dr. E. A. Tunnicliff, Bozeman, *secretary-treasurer*; and Drs. H. W. Jacobson, of Havre, and Fred Metcalf, of Missoula, *new members of the Executive Board*.

S/A. M. JASMIN, *Resident Secretary.*

New York

Dr. Milks and Dr. Sunderville Retire.—Two well-known and well-loved faculty members have retired from the New York State Veterinary College staff.—Dr. H. J. Milks and Dr. Earl Sunderville.



—Photo Science.

Dr. Earl Sunderville

Graduating from Cornell in 1904, Dr. Milks assisted Dr. P. A. Fish in the Department of Physiology, later heading the newly created Department of Therapeutics and Small Animal Clinic, after two years in animal pathology at the Louisiana Experiment Station, Baton Rouge. In 1913 he was elevated to the rank of professor.



Dr. H. J. Milks

He is a past president of the New York State Veterinary Medical Society and also served as its secretary for five years. He is widely known for his many articles on veterinary subjects and his textbook on pharmacology and therapeutics. It is expected that Dr. Milks will continue to be active in veterinary work.

Dr. Sunderville became an instructor, then assistant professor, of anatomy in the college following his graduation in 1908. In 1934 he was made professor and head of the anatomy

department. He has served as secretary of the New York State Veterinary College since 1926.

A member of the New York State Veterinary Medical Society and many other organizations, Dr. Sunderville represented the college at the International Veterinary Conference in London in 1930.

Duck Rations.—The first known feeding and nutrition experiments on ducks are underway at a 150-acre farm purchased from funds provided by the New York State legislature, in response to a demand for an economical duck ration.

Protest Regulation of Barbiturates.—The New York City Board of Health adopted stringent regulations on the over-the-counter sale of barbiturates, notwithstanding the strong protests of the pharmacists. The new rules require pharmacists to keep a record of purchases and sales for a period of two years. After Jan. 1, 1948, pharmacists will have to file inventories of their barbiturate stocks.

North Carolina

Dr. Moore, Sr., Resigns State Post.—Dr. William Moore, Sr., state veterinarian, Raleigh, has resigned his position to take over the Capitol Veterinary Hospital, a practice formerly conducted by his son, Dr. William Moore, Jr., who died in July. His address will be Route 1, Cary, N. Car.

Dr. L. J. Faulhaber, who has been connected with the state office for many years, succeeds Dr. Moore as state veterinarian, effective Sept. 1, 1947.

North Dakota

Embargo on Calf Importation.—The North Dakota Livestock Sanitary Board was editorially commended in the *Dakota Farmer* (July 5, 1947) following the suppression of a cattle influenza outbreak by an embargo on calf importations into the state. The prevention of enormous losses through such enforcements by the Board, under the direction of its executive officer, Dr. T. O. Brandenburg, has called increasing attention to the values that such vigilance brings to the state's agricultural endeavor.

Ohio

Northwestern Association.—Over 100 veterinarians attended the July 16 meeting of the Northwestern Ohio Veterinary Medical Association held at Archbold. The following program was presented.

Dr. E. R. Frank, Kansas State College, Manhattan: "Bovine Surgery" (motion picture).

Dr. W. L. Ingalls, The Ohio State University, Columbus: Poultry clinic.

Dr. George Lies, Fort Recovery: "Feeder Pig Problems," and swine clinic.

Dr. Clark Weaver, Perrysburg: Small animal clinic, with demonstrations of proper ear trimming and grooming of the dog.

Dr. Glen Biddle, Bryan: Cattle clinic, with demonstrations of painless dehorning, teat surgery, and discussion of grass tetany and allied conditions.

s/FRANK THORP, JR.

New Plant Facilities for Feed Company.—Dr. W. C. Heinz, Cincinnati, owner of the Dr. Heinz Company, feed manufacturers, has announced the purchase of new plant facilities to replace those lost in a \$300,000 fire last January. The new plant at Bloomingburg, with offices at Washington Court House, will process more feed and handle more grain than at any time in the concern's history.

Oklahoma

The World's Most Celebrated Bull.—The Hereford bull, Hazford Rupert 81st, owned by Governor Roy J. Turner of Oklahoma, is by and large the greatest bovine animal of all time. Although sold for only \$18,000 as a 3-year-old after winning the grand championship at the International Livestock Exposition in 1936, he sired 118 cows that sold for an average of \$1,200 and 160 bulls which sold at an average of \$2,100. The lot totaled \$486,225, not counting second and third generation offspring which brought the value of his descendants to more than \$1 million. A victim of a disabling arthritis, Old 81st, as he was called, was put to a painless death last July by severing the posterior aorta following spinal anesthesia.

Pennsylvania

York-Adams Society.—The York-Adams Veterinary Society met on June 17 at the Hanover Shoe Farms. Dr. C. R. Richards, superintendent of the farms, exhibited the 7 service stallions now on the farm and led the group on a tour to the yearling, mare, and foal sections. At the dinner meeting, Dr. Fritz Nilsson of the Royal Veterinary College, Stockholm, Sweden, Dr. Richards, and Dr. S. F. Scheidy, Drexel Hill, were the speakers.

s/GEORGE L. HARTENSTEIN, Secretary.

Personal.—Dr. Jack Krauss (UP '45) has taken over the small animal practice of the late Dr. H. Broude and is now located at 2004 N. Cameron St., Harrisburg.

Vermont

Summer Association Meeting.—The Vermont Veterinary Medical Association held its summer meeting on the campus of the University of Vermont, Burlington, on July 18, with 49 veterinarians and their guests present. President L. A. Evans introduced Mr. Stanley Judd, commissioner of agriculture, who opened the program. Other speakers on the program were:

Mr. Paul Schlenker, Ralston-Purina Company, St. Louis, Mo.: "Handling Your Hunting Dog" (film).

Dr. C. C. Logan, St. Albans: "The Work of the Border Inspector."

Dr. A. G. Wilder, Woodstock: "A Veterinarian's Experience in Poland."

Dr. A. F. Ranney, U. S. BAI inspector in charge, Montpelier: "Vesicular Diseases of Domestic Animals," (with USDA film).

A panel discussion on cattle diseases was led by Dr. David Hopkins of Brattleboro, assisted by Drs. C. M. Miller, Orwell; A. A. Mortimer, Randolph; L. D. Perry, St. Albans; and W. G. Collins, Hanover, N. H.

The banquet speaker was Dr. Paul Miller, associate dean of the State Agricultural College, University of Vermont.

s/E. F. WALLER, Secretary.

FOREIGN

Australia

World Food Situation.—Sir John Boyd, director-general of the U. N. Food and Agriculture Organization warned in a report on the present world food situation that the emergency is not yet over. The chief food problem on a worldwide basis is one of scarcity of basic foodstuffs. The United States' corn crop (1946) of 3,388,000,000 bu. represents 60 per cent of the world's total production of that commodity.—*From the Journal of the Department of Agriculture of South Australia.*

Cuba

Foot-and-Mouth Disease Precautions.—Cuba has taken "unusual precautions" to keep out foot-and-mouth disease, *Western Livestock Journal* reports.

Soon after the Mexican outbreak, a Cuban committee was formed to study quarantine methods in the United States and the eradication program in Mexico. On the advice of this committee, the government established a livestock quarantine service in the office of the Ministry of Agriculture to inspect the clothing and baggage of passengers, and also cargo arriving in Cuba from countries where foot-and-mouth disease exists.

Germany

Insulin for Hogs.—The leave-no-stone-unturned policy to augment wartime food production was indicated by experiments on the use of insulin to ameliorate the health and accelerate the fattening of swine. Daily doses of 20 units given over a period of four weeks and checked against nontreated pigs demonstrated that insulin had no value for these purposes.—*Deutsche Tierärztl. Wochenschr.*, (1941): 61. *Abstr. Rec. Méd. Vét.*, (Apr., 1947): 174.

The Veterinary Service.—Lt. Col. J. Hickman, R.A.V.C., on duty with the British Control Commission for Germany, praises the German veterinary service (*J. Roy. Army Vet. Corps*, May, 1947) as an organization of great merit. The government's veterinary service is a section of the Public Health Division, Ministry of the Interior, in Berlin. It has charge of veterinary education, of the control of infectious diseases, of the inspection of meat and food from animals, of the slaughtering and transporting of livestock, and, in principle, manages all branches of veterinary medicine. The chief, Dr. Weber, has cabinet status, a rank never before attained anywhere by the veterinary profession and a symbol of the German's evaluation of veterinary science.

Mexico

President Aleman Stands Solidly Behind Foot-and-Mouth Campaign.—President Miguel Aleman takes a keen personal interest in the

campaign that is being waged against foot-and-mouth disease. He has recently concluded a three-day inspection and speaking tour in the infected area, told the people that its eradication is the country's foremost problem and, speaking to state officials, ranchers, and citizens stated that the means being followed represents the only method by which the disease can be driven from the country.

Puerto Rico

Dr. F. Menéndez Guillot Retires from Insular Government.—Dr. F. Menéndez Guillot (UP '18) has retired from the position of chief of the Cattle Industry Division, Insular Department of Agriculture and Commerce, having completed thirty years of service. He will serve as a veterinarian for a livestock feed concern in Texas.

• • •

Health Certificate Required.—The city council of San Juan has enacted a new ordinance requiring owners to present each year a health certificate signed by an authorized veterinarian, in order to have their dogs registered. In this way a yearly checkup is assured and the public is better educated on the care of pets. Dr. López-Pacheco (TEX '42), technical advisor for the director of public works, was instrumental in the enactment of this law.

• • •

Dog-Shipping Regulations Enforced.—Puerto Rico is now a rabies-free area, and veterinarians in the Insular Government are striving to enforce all regulations on the entrance of dogs into that country. Shipping companies (maritime and air) operating between the States and Puerto Rico have been furnished with copies of these regulations.

s/O. P. LÓPEZ-PACHECO,
Resident Territorial Secretary.

COMING MEETINGS

Alabama Polytechnic Institute. Annual Conference for Veterinarians. Alabama Polytechnic Institute, Auburn, Sept. 4-6, 1947. R. S. Sugg, College of Veterinary Medicine, Alabama Polytechnic Institute, dean.

New Mexico Veterinary Medical Association. Las Cruces, New Mexico, Sept. 8-9, 1947. S. W. Wiest, P. O. Box 75, Santa Fe, New Mexico, secretary-treasurer.

Northern Illinois Veterinary Medical Association. Faust Hotel, Rockford, Ill., Sept. 10, 1947. C. L. Smith, Sycamore, Ill., secretary-treasurer.

Ohio State University. Laboratory Short Course for Veterinarians. College of Veterinary Medicine, Ohio State University, Columbus 10, Sept. 15-20, 1947. W. R. Krill, College of Veterinary Medicine, Ohio State University, dean.

University of Georgia. Annual Short Course for Veterinarians. Georgia Coastal Plain Experiment Station, Tifton, Ga., Sept. 23-24, 1947. William L. Sippel, Dept. of Animal Diseases, Georgia Coastal Plain Experiment Station, head.

Purdue University. Annual Short Course for Veterinarians, Purdue University, Lafayette,

Ind., Oct. 1-3, 1947. C. R. Donham, Dept. of Veterinary Science, Purdue University, head. University of Illinois. Annual Conference for Veterinarians. College of Veterinary Medicine, University of Illinois, Urbana, Oct. 6-9, 1947. Robert Graham, College of Veterinary Medicine, University of Illinois, dean.

American Public Health Association. Atlantic City, N. J., Oct. 6-10, 1947. Reginald M. Atwater, 1790 Broadway, New York, N. Y., executive secretary.

West Virginia Veterinary Medical Association. Kanawha Hotel, Charleston, W. Va., Oct. 13-14, 1947. R. M. Johnson, 710 Red Oak St., Charleston 2, W. Va., secretary-treasurer.

Eastern Iowa Veterinary Association, Inc. Hotel Montrose, Cedar Rapids, Iowa, Oct. 14-15, 1947. Laurence P. Scott, P. O. Box 325, Waterloo, Iowa, secretary.

Pennsylvania State Veterinary Medical Association. Penn Harris, Harrisburg, Pa., Oct. 15-17, 1947. Raymond C. Snyder, N. W. Cor. Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

North Central Iowa Veterinary Medical Association. Wahkonsa Hotel, Fort Dodge, Iowa, Oct. 23, 1947. B. J. Gray, Fort Dodge Laboratories, Fort Dodge, Iowa, secretary-treasurer.

Florida State Veterinary Medical Association. Bennett Hotel, St. Augustine, Fla., Oct. 27-28, 1947. V. L. Bruns, Box 623, Williston, Fla., secretary-treasurer.

University of Minnesota. Annual Short Course for Veterinarians. University Farm, St. Paul 8, Minn., Oct. 29-30, 1947. W. L. Boyd, Division of Veterinary Medicine, University Farm, chief.

Midwest Small Animal Association. Hotel Burlington, Iowa, Nov. 13, 1947. Wayne H. Riser, 1817 Church St., Evanston, Ill., secretary.

Southern Veterinary Medical Association. Roosevelt Hotel, New Orleans, La., Nov. 17-19, 1947. A. A. Husman, 320 Agricultural Bldg., Raleigh, N. Car., secretary.

Ohio State Veterinary Medical Association. Deshler-Wallick Hotel, Columbus, Ohio, Jan. 7-9, 1948. F. J. Kingma, College of Veterinary Medicine, Ohio State University, Columbus, Ohio, secretary.

Intermountain Veterinary Medical Association. Salt Lake City, Utah, Jan. 12-14, 1948. M. L. Miner, Dept. of Veterinary Science, Utah State Agricultural College, Logan, secretary.

Kansas Veterinary Medical Association. Topeka, Kan., Feb. 5-6, 1948. C. W. Bower, 3119 Staford St., Topeka, Kan., secretary.

Chicago Veterinary Medical Association. Palmer House, Chicago, Ill., the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

Keystone Veterinary Medical Association. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., the fourth Wednesday of each month. Raymond C. Snyder, N. W. Cor. Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

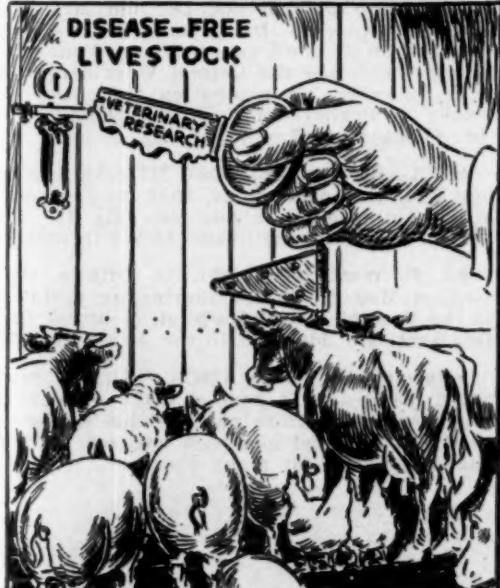
Massachusetts Veterinary Association. Hotel Statler, Boston, Mass., the fourth Wednesday of each month. E. A. Woelffer, c/o H. P. Hood & Sons, Boston, Mass., secretary-treasurer.

New York City Veterinary Medical Association. Hotel Pennsylvania, New York, N. Y., the first Wednesday of each month. C. B. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Saint Louis District Meetings. Roosevelt Hotel, St. Louis, Mo., the first Friday of February, April, June and November. W. C. Schofield, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

Houston Veterinary Medical Association. Houston, Tex., the first Thursday of each month. Edward Lepon, Houston, Tex., secretary-treasurer.

THE KEY TO LIVESTOCK PROFITS



VETERINARY MILITARY SERVICE

Veterinary Officers Separated from Military Service

Alabama

Hill, Robert S.
Fulenwider, H. M.
Head, T. E., Jr.

Hause, Robert D.
Huffaker, Robert H.
Miller, Leslie D.

Illinois

Allen, James H.
Cox, John L.
Stratmeyer, E. H.

Indiana

Brattain, Donald B.
Schlosser, D. B.

Iowa

Anderson, Walter R.
DeValois, Donald G.
Lundvall, R. L.
Pease, Lawrence H.

Kansas

Cheney, J. Hamilton
Combs, Oral V.
Strathman, Elmer H.
Webb, Lowell M.

Colorado

Barngrover, W. J.
Eatinger, Eugene E.
Eyl, Norman W.
Frandsen, Rowen D.

Maryland

James, E. H., Jr.

Massachusetts

Grennan, T. J., Jr.

MichiganBell, James A.
Collins, Douglas J.
Freid, Norman T.
Milliman, Earl M.
Van Nocker, K. C.
Veenstra, R. J.**Minnesota**

Voetberg, Henry G.

MississippiLivingston, P. S.
Whitfield, J. S.**Missouri**Brown, Clyde E.
Chapin, John A.
Dickmann, H. W.
Hineman, R. E.
Hoadley, R. E.**Nebraska**

Phillipson, D. A.

New Jersey

Moor, John W.

New Mexico

Ausherman, L. T.

New YorkVaughn, T. C., Jr.
Woodcock, J. G.**North Carolina**

Baucom, Robert E.

OhioAdams, Robert C.
Diesem, Charles D.
Hitesman, Paul W.
Mallo, Merle A.
Menges, Robert W.
Newhouse, H. E., Jr.
Nichols, F. A.
Ross, Jewell N.
Worley, R. W.**Oklahoma**

Grueter, Herman P.

Oregon

Davis, Sanford E.

PennsylvaniaMootz, C. E., Jr.
Penny, James M.**South Carolina**Cooper, I. R., Jr.
Kellett, S. J., Jr.**Texas**

Cross, James L.

VirginiaBoyd, Oscar L.
Thompson, Leon W.**Wisconsin**

Romaker, R. H.

BIRTHS

To Dr. (ISC '34) and Mrs. F. E. Wilhite, 756 Greenwood Ave., N.E., Atlanta, Ga., a son, Roland VanPaul, April 8, 1947.

To Dr. (ISC '45) and Mrs. A. O. H. Setzepfandt, Bird Island, Minn., a son, Alvin O. H., III, May 31, 1947.

To Dr. (API '43) and Mrs. Robert E. Lee, Tallahassee, Fla., a daughter, Rhea Suzanne, June 19, 1947.

To Dr. (KSC '42) and Mrs. Arthur D. Kirk, 5802 E. Sprague Ave., Spokane 15, Wash., a son, James Patrick, June 21, 1947.

To Dr. (ISC '38) and Mrs. Myron S. Arlein, 515 Avon Ave., Newark, N. J., a son, Robert Michael, July 3, 1947.

DEATHS

★**Mart S. Britten** (GR RAP '15), 60, Napoleon, Ohio, died March 24, 1947. He was with the

★Indicates member of the AVMA.

U. S. Bureau of Animal Industry. Dr. Britten was admitted to the AVMA in 1929.

★**Howard C. Gale** (KCVC '10), 67, Hutchinson, Kan., died May 21, 1947. Dr. Gale was in practice in Clyde, Kan., for eighteen years, serving the community as mayor and a member of the school board, and later moved to Concordia, Kan. Following two years of army service in 1920, he held the rank of major in the reserve. After three years of CCC work in Arizona, he entered the U. S. BAI, serving in Texas, Georgia, Florida, Illinois, and Kansas. Dr. Gale was admitted to the AVMA in 1917.

★**H. A. Hoffman** (KSC '17), 54, Sacramento, Calif., died July 19, 1947, while on a hiking trip into Desolation Valley, high in the Sierra-Nevada Mountains. Born in Ottawa, Kan., he was a second lieutenant in the U. S. Army during World War I, following his graduation from Kansas State College. After further study at Cornell University, he served for six years as associate professor of bacteriology at Antioch College in Ohio. From 1930 until his death, Dr. Hoffman was a livestock pathologist with the California Division of Animal Industry. He was president of the Sacramento Valley Veterinary Medical Association and had been a member of the AVMA since 1918.

★**Horace B. Jervis** (ONT '04), 69, Santa Monica, Calif., died April 2, 1947, of coronary thrombosis. Dr. Jervis had been a member of the AVMA since 1913.

★**Gerald E. McCormick** (ONT '43), 26, Ormstown, Que., died early in the year as a result of an automobile accident while making a call during the night. He was admitted to the AVMA in 1943.

★**William Moore, Jr.** (UP '37), 34, Raleigh, N. Car., died July 15, 1947, following a heart attack. Born in Cambridge, Md., he came to Raleigh with his parents, Dr. and Mrs. William Moore, when Dr. Moore, Sr., assumed the position of state veterinarian. Young Dr. Moore established the Capitol Veterinary Hospital following his graduation from the University of Pennsylvania. He was admitted to the AVMA in 1937.

★**D. L. Proctor, Sr.** (OSU '17), 51, Lexington, Ky., died on July 22, 1947, as the result of an automobile accident on July 16. Dr. Proctor was admitted to the AVMA in 1938.

★**J. R. West** (ONT '30), 48, Ottawa, Ont., died on May 22, 1947, following an operation at the Ross Memorial Hospital, Montreal, Que. Dr. West was admitted to the AVMA in 1934.

★**Howard H. White** (MCK '18), 57, Sandpoint, Idaho, died in June of 1947. A native of Wisconsin, Dr. White obtained his license in Idaho in 1920 and had been engaged in large animal practice for many years.

"SHIPPING FEVER" LOSSES CAN BE CONTROLLED

Field results, as well as extensive experimental work, show that the most efficient and practical method for preventing losses from infections incident to shipment of cattle is the administration of relatively small dosage of

Anti-Hemorrhagic Septicemia Serum (Lockhart)

1. Immediately before shipment of cattle, inject Anti-Hemorrhagic Septicemia Serum (Lockhart). Dosage: 8 to 10 cc per hundred pounds of weight.
2. When it is not possible to make injections before shipment of cattle, the administration of 12 to 15 cc of serum per hundred pounds weight, during or immediately after shipment, produces equally as good results as the above.
3. In some districts and in some seasons, diphtheroid organisms play an important part in the "shipping fever" complex. Under such conditions

Anti-Corynebacterium Pasteurella Serum (Lockhart)

should be used in place of above.

It is generally recognized that the hemorrhagic septicemia organism plays an important part in the losses incident to shipment of cattle, but many veterinary pathologists believe that filterable virus is often the primary inciting cause of so-called "shipping fever." Because of this possibility, Lockhart Anti-Hemorrhagic Septicemia Serum and Anti-Corynebacterium Pasteurella Serum are produced from mature bovines known to be immune to the various "shipping fevers." In our opinion, this "Plus Value" accounts for the superiority of the results obtained from its use.

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